Attachment A

Water Quality Assessment

Use Classifications

The Indiana Harbor Canal and Indiana Harbor are designated for full-body contact recreation and shall be capable of supporting a well-balanced, warm water aquatic community. The Indiana Harbor is designated as an industrial water supply. Indiana regulation at 327 IAC 2-1.5-2(64) defines the open waters of Lake Michigan as the following:

"...all of the waters within Lake Michigan lakeward from a line drawn across the mouth of tributaries to the lake, including all waters enclosed by constructed breakwaters. For the Indiana Harbor Ship Canal, the boundary of the open waters of Lake Michigan is delineated by a line drawn across the mouth of the harbor from the East Breakwater Light (1995 United States Coast Guard Light List No. 19675) to the northernmost point of the LTV Steel property along the west side of the harbor."

The northernmost point of the LTV Steel (now ArcelorMittal Indiana Harbor West) property is the breakwall along the west side of the harbor. On the west side of the northernmost point of this breakwall is the inlet of a mile long channel that serves as the source of water for the ArcelorMittal Indiana Harbor West No. 2 and No. 3 water intakes. Based on the above definition, this channel was considered the open waters of Lake Michigan. The Indiana portion of the open waters of Lake Michigan is designated for full-body contact recreation; shall be capable of supporting a well-balanced, warm water aquatic community; is designated as salmonid waters and shall be capable of supporting a salmonid fishery; is designated as a public water supply; is designated as an industrial water supply; and, is designated as an outstanding state resource water. These waterbodies are identified as waters of the state within the Great Lakes system. As such, they are subject to the water quality standards and associated implementation procedures specific to Great Lakes system dischargers as found in 327 IAC 2-1.5, 327 IAC 5-1.5, and 327 IAC 5-2.

Section 303(d) of the Clean Water Act requires states to identify waters, through their Section 305(b) water quality assessments, that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Once this listing and ranking of impaired waters is completed, the states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with the water quality standards. Indiana's 2010 303(d) List of Impaired Waters was developed in accordance with Indiana's Water Quality Assessment and 303(d) Listing Methodology for Waterbody Impairments and Total Maximum Daily Load Development for the 2010 Cycle. As of the 2010 303(d) List of Impaired Waters, the following impairments were listed for waters to which the permittee discharges:

Table 1

Assessment Unit	Waterbody	Impairments	ArcelorMittal West Outfalls
INC0163_T1001	Indiana Harbor Canal	Impaired Biotic Communities, Oil and Grease, *E. coli* and PCBs in Fish Tissue	002, 009 and 010
INC0163G_G1078	Indiana Harbor	Free Cyanide, Mercury in Fish Tissue and PCBs in Fish Tissue	011
INM00G1000_00	Lake Michigan	Mercury in Fish Tissue and PCBs in Fish Tissue	012

http://www.in.gov/idem/4680.htm
[link to water quality-limited database – 303d list]

http://www.in.gov/idem/4676.htm
[link to TMDL web site]

Water Quality Based Effluent Limitations

The NPDES permit for ArcelorMittal Indiana Harbor West was last renewed in 1986 and expired in 1991. Water quality-based effluent limitations (WQBELs) were not applied to any outfall in the 1986 permit, but WQBELs for Total Residual Chlorine were included in a 1991 permit modification at Outfalls 002, 009, 010 and 011. The WQBELs for Total Residual Chlorine were calculated using water quality criteria that became effective in 1990. The 1986 permit did include limits for Ammonia-N and Phenols (4AAP) at Outfalls 009, 010 and 011 based on a 301(g) variance. The limits based on the variance were more stringent than the WQBELs that would apply to each outfall. The WQBELs for Ammonia-N and Phenols (4AAP) that applied to Outfalls 009, 010 and 011 were included in the October 1984 HydroQual report "Grand Calumet River Wasteload Allocation Study." This wasteload allocation study included a multi-discharger model for the Indiana Harbor Watershed (Grand Calumet River (East and West Branches), Indiana Harbor Canal and Indiana Harbor).

The 1992 Grand Calumet River – Indiana Harbor Ship Canal Wasteload Allocation Study was completed after the NPDES permit for ArcelorMittal Indiana Harbor West expired in 1991. The 1992 wasteload allocation was based on the 1990 Indiana water quality standards (new water quality criteria and an upgraded use designation for the Grand Calumet River and Indiana Harbor Canal) and a multi-discharger model that included the Indiana Harbor Watershed and portions of Lake Michigan around the Indiana Harbor. Pollutants selected for the wasteload allocation were based on water quality concerns at the time. Specific allocations for Total Cyanide and Phenols (4AAP) were assigned to Outfalls 009 and 010 and specific allocations for Ammonia-N, Total Cyanide, Fluoride, Sulfate, Phenols (4AAP), Lead and Zinc were assigned to Outfall 011 as part

of the wasteload allocation. The results of the 1992 wasteload allocation were not incorporated in a permit renewal for ArcelorMittal Indiana Harbor West.

New regulations in Indiana governing the development of water quality-based effluent limitations for discharges to waters within the Great Lakes system became effective in 1997. The regulations were developed in accordance with the Water Quality Guidance for the Great Lakes System at 40 CFR Part 132. The regulations included new water quality criteria and methodologies for developing water quality criteria (327 IAC 2-1.5), and procedures for calculating wasteload allocations (WLAs) (327 IAC 5-2-11.4), making reasonable potential to exceed determinations (5-2-11.5) and developing water quality-based effluent limitations (WQBELs) (5-2-11.6). These regulations are applicable to individual pollutants and to whole effluent toxicity. The application of whole effluent toxicity requirements to ArcelorMittal is included in a later section. Due to the new regulations, a different approach was warranted in determining the need for and establishing WQBELs in the Grand Calumet River, Indiana Harbor Canal and Indiana Harbor.

The 1992 multi-discharger model included a hydrodynamic component and a water quality component and was able to simulate instream dissolved oxygen concentrations. The model also accounted for flow stratification in the Indiana Harbor Canal and Indiana Harbor and the intrusion of lake water into the Indiana Harbor Canal. The model did not restrict any point source discharges based on mixing zones. The development of a hydrodynamic model for the whole watershed is a resource intensive effort that still requires IDEM to develop wasteload allocations for each outfall to be used as inputs into the model. The 1997 Great Lakes rules added additional requirements for the development of wasteload allocations that were not required in previous modeling efforts. The antidegradation implementation provisions included in the 1997 Great Lakes rules also added an additional level of scrutiny to the incorporation of wasteload allocations developed through the new regulations into NPDES permits.

A review of the 2010 303(d) list shows that there are no pollutants on the list that have the potential to impact wasteload allocation analyses conducted for the renewal of NPDES permits for dischargers on a whole watershed basis. The new listing for Free Cyanide in the Indiana Harbor could potentially impact discharges to the Indiana Harbor Canal and Indiana Harbor. The listing is based on Free Cyanide data collected during the years 2000 and 2001 at IDEM fixed station IHC-0 in the Indiana Harbor. The aquatic life criteria for cyanide were changed from Total Cyanide to Free Cyanide in the 1997 Great Lakes rulemaking. It is IDEM current practice to monitor for Total Cyanide at fixed stations and analyze samples for Free Cyanide only when Total Cyanide data show a reportable concentration (> 5 ug/l). After 2001, data collected at fixed station IHC-0 no longer showed any reportable values for Total Cyanide so Free Cyanide data were not collected. Based on the 2010 listing methodology, the Total Cyanide data could not be used to assess the Indiana Harbor for Free Cyanide. The Indiana Harbor Canal was not listed for Free Cyanide on the 2010 303(d) list due to the two IDEM fixed stations in the Indiana Harbor Canal (located upstream of fixed station IHC-0 at Columbus Avenue and Dickey Road) not showing impairment for Free Cyanide. Total Cyanide is reported at many of the steel mill outfalls in the Indiana Harbor Canal and Indiana Harbor due to technology-based effluent limits (TBELs) for this parameter, but little data for Free Cyanide are available. Therefore, in the NPDES permit renewals, monitoring for Free Cyanide will be required at steel mill outfalls

that have process wastewater for use in an assessment of reasonable potential. These data can also be used along with Total Cyanide data at fixed station IHC-0 and data collected in the Indiana Harbor Canal to reassess the impairment for Free Cyanide.

Therefore, a whole watershed model is not required at this time to develop permit requirements to address any TMDL related issues. There is currently not a need to develop WLAs for pollutants that impact the instream dissolved oxygen so a whole watershed hydrodynamic model is not needed for this purpose. There are several items that have occurred in the Indiana Harbor watershed since the 1992 model was developed that can be used to help establish a reasonable approach, other than a whole watershed model, to develop WLAs for discharges in the watershed. The number of dischargers to the Indiana Harbor watershed has decreased, the number of steel mill outfalls has decreased and the discharge volume at many of the remaining steel mill outfalls has decreased. U.S. Steel Gary Works dredged the five mile stretch of the East Branch Grand Calumet River along their property in 2003. Dredging of portions of the West Branch Grand Calumet River west of Indianapolis Boulevard began in December 2009. Data for a variety of parameters have been collected on a monthly basis by IDEM at several fixed water quality monitoring stations in the watershed. Three stations are located on the East Branch Grand Calumet River, one on the West Branch Grand Calumet River, two on the Indiana Harbor Canal, one on Lake George Canal and one on the Indiana Harbor. The U.S. Geological Survey (USGS) installed a stream gage in the Indiana Harbor Canal in 1991 that can be used to determine the Q7,10 and other stream flow statistics of the Indiana Harbor Canal. An intensive instream sampling effort along with effluent sampling of major dischargers occurred in July 1999 and April 2000 as part of the Grand Calumet River TMDL Study.

Taking into consideration the above information, it was decided to divide the Indiana Harbor watershed into three subwatersheds and determine the need for and establish water quality-based effluent limitations on a subwatershed basis. In this approach, the background concentration for each subwatershed is determined using instream water quality data instead of concentrations determined through whole watershed modeling. During the development of the wasteload allocation for the U.S. Steel Gary Works (IN0000281) NPDES permit that was renewed January 22, 2010, the Indiana Harbor watershed was divided into the following three subwatersheds: East Branch Grand Calumet River, West Branch Grand Calumet River (the portion that flows east into the Indiana Harbor Canal) and the Indiana Harbor Canal/Lake George Canal/Indiana Harbor. The analysis for the East Branch Grand Calumet River is included in the Fact Sheet of the U.S. Steel Gary Works 2010 permit. The analysis for the West Branch Grand Calumet River will be conducted as part of the NPDES permit renewals for the Hammond Sanitary District (IN0023060) and the East Chicago Sanitary District (IN0022829).

The subwatershed model for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor included ArcelorMittal Indiana Harbor – Indiana Harbor West which has three active outfalls to the Indiana Harbor Canal, one active outfall to the Indiana Harbor, and one water intake in the Indiana Harbor near the mouth of the Indiana Harbor Canal. The other major dischargers included in the subwatershed model are as follows in relation to the ArcelorMittal Indiana Harbor West facility: ArcelorMittal USA - Indiana Harbor Long Carbon (IN0063355) which has one active outfall upstream to the Indiana Harbor Canal; ArcelorMittal Indiana Harbor East which has one active outfall, consisting of groundwater and stormwater, that discharges directly

to the Indiana Harbor Canal, and three active outfalls that discharge directly to the Indiana Harbor; and, ArcelorMittal Indiana Harbor – Central Wastewater Treatment Plant (IN0063711) which has one active outfall upstream to the Indiana Harbor Canal. The discharges from all these facilities were taken into consideration in determining the need for and establishing WQBELs for the discharges from the ArcelorMittal Indiana Harbor West outfalls.

The procedures under 5-2-11.4 may be used to establish TMDLs, wasteload allocations in the absence of TMDLs and preliminary wasteload allocations. These procedures apply to the discharges to the Indiana Harbor Canal/Lake George Canal/Indiana Harbor. A TMDL has not been completed for the Assessment Units for the Indiana Harbor Canal and Indiana Harbor receiving the discharges from ArcelorMittal and a TMDL is not required for any of the pollutants of concern being considered in the wasteload allocation analysis. Therefore, the procedures under 5-2-11.4 were used to develop preliminary wasteload allocations and wasteload allocations in the absence of a TMDL.

Wasteload allocations in the absence of TMDLs are developed to establish water quality-based effluent limitations under 5-2-11.6 and preliminary wasteload allocations are developed to make reasonable potential determinations under 5-2-11.5. The reasonable potential procedures under 5-2-11.5 include provisions for making reasonable potential determinations using best professional judgment (5-2-11.5(a)) and using a statistical procedure (5-2-11.5(b)). The statistical procedure is a screening process in which a projected effluent quality (PEQ) based on effluent data is calculated and compared to a preliminary effluent limitation (PEL) based on the preliminary wasteload allocation. Both the best professional judgment and statistical procedures were used to establish the need for water quality-based effluent limitations to protect the designated uses of the Indiana Harbor Canal, Indiana Harbor, and Lake Michigan.

A separate provision for making reasonable potential determinations is included under 5-2-11.5(g) for discharges consisting solely of once-through noncontact cooling water (NCCW) whose intake and outfall points for the NCCW are located on the same body of water. This provision may also be applied to discharges consisting of mixed wastestreams (e.g. NCCW, stormwater and process wastewater) if each component is considered separately. The discharges from ArcelorMittal West Outfalls 002, 009 and 010 consist mostly of NCCW with smaller amounts of stormwater and groundwater. Outfall 009 will contain a new internal Outfall 509 in the renewal permit. One condition for determining whether the intake and outfall points are located on the same body of water is that, "there be a direct hydrological connection between the intake and discharge points (the water at the point of intake naturally flows toward the water at the point of discharge)" (5-2-11.5(b)(4)(B)(i)(BB)). In addition, an intake pollutant shall be considered to be from the same body of water as the discharge if the intake point is located on Lake Michigan and the outfall point is located on a tributary of Lake Michigan and specific conditions listed in the rules are met (5-2-11.5(b)(4)(B)(iv)). For ArcelorMittal West, the cooling water system, which includes two intakes in Lake Michigan and one in the Indiana Harbor, is interconnected. The intake in the Indiana Harbor is downstream of Outfalls 002, 009 and 010. Therefore, although reverse flows do occur in the Indiana Harbor Canal, water at the point of intake does not naturally flow toward the water at the point of discharge so 5-2-11.5(g) is not applicable to Outfalls 002, 009 and 010. Therefore, 5-2-11.5(g) was not applied to any ArcelorMittal outfall.

To develop wasteload allocations and conduct reasonable potential to exceed analyses, IDEM utilized the following effluent data collected and submitted by ArcelorMittal: data collected during the period July 2005 through June 2010 in accordance with the current permit and reported on monthly monitoring reports (MMRs); data collected in 1999 and 2000 as part of the Grand Calumet River TMDL study; and, data collected for the 2005 and 2009 permit renewal application updates. In response to an IDEM enforcement action for violations of effluent limitations for Zinc at Outfall 011, the facility began using an additional treatment chemical to assist in the removal of zinc from the wastewater. Therefore, effluent data for Zinc collected prior to January 2009 at Outfall 011 were not considered to be representative and were not used in the reasonable potential analysis.

To develop wasteload allocations, IDEM utilized the following sources of water quality data for the Indiana Harbor Canal and Indiana Harbor: IDEM fixed water quality monitoring station IHC-3S at Columbus Drive (Indiana Harbor Canal upstream of Lake George Canal and all ArcelorMittal outfalls); IDEM fixed station IHC-2 at Dickey Road (Indiana Harbor Canal); IDEM fixed station IHC-0 at the mouth of the Indiana Harbor just upstream of Outfall 011; data collected in the Indiana Harbor Canal and Indiana Harbor in 1999 and 2000 as part of the Grand Calumet River TMDL study; data collected by ArcelorMittal USA – Indiana Harbor East at two locations in the Indiana Harbor Canal and one location in the Indiana Harbor during their six week monitoring period in 1996; and, Mercury data collected by USGS in 2001 and 2002.

After a review of effluent and instream data for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor subwatershed, it was decided to conduct a multi-discharger WLA for Ammonia-N, Chloride, Fluoride, Sulfate, Lead, Zinc and Total Residual Chlorine. Indiana currently only has a Great Lakes water quality criterion for Sulfate that applies to public water supply intakes and to Lake Michigan. A screening value based on the Indiana criterion for waters outside the Great Lakes system at 2-1-6(a)(5) was used for the Indiana Harbor Canal and Indiana Harbor. An industrial water supply criterion for Total Dissolved Solids of 750 mg/l applies in the Indiana Harbor at the ArcelorMittal Indiana Harbor West intake. This also limits the amount of Sulfate that can be discharged due its contribution to dissolved solids. Other pollutants of concern, including Mercury, were considered on an outfall by outfall basis for the dischargers in the subwatershed. Effluent data for ArcelorMittal Indiana Harbor West Outfalls 002, 009 and 010 from the 1999 Grand Calumet River TMDL Study showed Total Chromium concentrations of less than 2 ug/l. Effluent data for Outfall 011 collected in 1999 for the TMDL study showed a Total Chromium concentration of less than 2 ug/l and effluent data collected for the 2005 permit renewal application update showed a Total Chromium concentration of less than 0.6 ug/l. Based on these data points being much less than the most stringent, applicable water quality criteria (120 ug/l dissolved Chromium (III) and 11 ug/l dissolved Hexavalent Chromium), Total Chromium and Hexavalent Chromium were not considered pollutants of concern for Outfalls 002, 009, 010 and 011.

In the 1992 model, the Indiana Harbor Canal was divided into sixteen complete mix segments, the Lake George Canal into five complete mix segments and the Indiana Harbor into five complete mix segments. Each of these segments included surface and bottom layers to account for stratification resulting from the warmer canal water inducing an underflow of cooler lake

water. The intrusion of lake water was accounted for in the model by adding a portion of the total lake intrusion flow to the surface layer of each of nine affected segments in the Indiana Harbor and Indiana Harbor Canal. A total lake intrusion flow of 1000 cfs was used in the 1992 model. The lake intrusion flow was reevaluated in 2002 by the U.S. Army Corps of Engineers (USACE) as part of the Grand Calumet River TMDL Study. The USACE determined that the lake intrusion flow used in the 1992 model was based on measurements collected during a high lake level. The USGS measured a lake intrusion flow of 138 cfs in October 2002 during a normal lake level condition. The lake intrusion flow measured during the normal lake level condition was determined to be more appropriate for modeling purposes. A new multi-discharger model was developed using a spreadsheet to conduct the multi-discharger WLA for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor. The segmentation used in the 1992 model was maintained in the new spreadsheet model, but only the surface layer was modeled since it will have the higher pollutant concentrations.

In the development of wasteload allocation inputs for the 1992 model, the final acute value (FAV) was applied to individual outfalls and chronic criteria were applied to the end of each segment allowing up to one hundred percent (100%) of the stream flow for mixing. The procedures in 5-2-11.4 require the more stringent of the FAV or the acute WLA calculated using up to a one-to-one dilution to be applied to individual outfalls. They also limit the dilution available for each outfall (the mixing zone) to twenty-five percent (25%) of the stream design flow. Because of the potential for overlapping mixing zones within a segment, the combined discharges in a segment were also limited collectively to twenty-five percent (25%) of the stream design flow. This was done in accordance with 5-2-11.4(b)(3)(D) which requires the combined effect of overlapping mixing zones to be evaluated to ensure that applicable criteria and values are met in the area where the mixing zones overlap.

Based on the reasonable potential statistical procedure at 5-2-11.5(b)(1)(iii) and (iv), the procedures under 5-2-11.4(c) are used as the basis for determining preliminary WLAs and the preliminary WLAs are then used to develop monthly and daily PELs in accordance with the procedure for converting WLAs into WQBELs under 5-2-11.6. Three critical inputs to the procedure under 5-2-11.4(c) include the background concentration, the effluent flow and the stream flow. The background concentration is determined under 5-2-11.4(a)(8). Under this rule, background concentrations can be determined using actual instream data or instream concentrations estimated using actual or projected pollutant loading data. In the multi-discharger WLA, instream data were used to establish the background concentration for the first segment of the model and then either actual or projected pollutant loading data were used. For pollutants not included in the multi-discharger WLA, instream data were used.

In the 1992 model, the flow assigned to each outfall was the long-term average flow. This was continued in the current analysis using data from January 2006 through December 2007. For Outfall 009, the new Internal Outfall 509 flow (1.1 mgd) was added to the current long-term average flow (54.2 mgd) to obtain a new Outfall 009 flow of 55.3 mgd for the permit renewal. The stream design flow used to develop wasteload allocations is determined under 5-2-11.4(b)(3). For the pollutants considered in this analysis, the aquatic life criteria are limiting and the stream design flow for chronic aquatic life criteria is the Q7,10. The flow entering the Indiana Harbor Canal consists mostly of treated effluent flow. It has been historical practice to

carry the long-term average discharge flow through the watershed to be used to determine discharge requirements for downstream dischargers. Since three distinct subwatersheds are now being modeled and the background concentration is being reset using actual instream data, it was also necessary to reset the stream flow. Since the Q7,10 is the appropriate flow for the water quality criteria being considered, the Q7,10 was used as the upstream flow for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor WLA. Therefore, the stream design flow was set equal to the Q7,10 flow in the first segment of the multi-discharger model and then the long-term average flow of each discharger was added to become the stream design flow for downstream dischargers. The lake intrusion flow was added to the stream design flow at the end of each applicable segment. The Q7,10 was calculated using data from USGS gaging station 04092750 which is located in the Indiana Harbor Canal at Canal Street. The data used in the calculation consisted of continuous daily mean flow data approved by the USGS for the period 10-1-1994 through 9-30-2009. The Q7,10 based on the climatic year (April 1 through March 31) is 352 cfs.

At each applicable outfall, PELs were calculated for each pollutant of concern using an outfall specific spreadsheet that calculates PELs using the procedures under 5-2-11.4(c) to calculate WLAs and the procedures under 5-2-11.6 to convert WLAs into PELs. The spreadsheet considers all water quality criteria (acute and chronic aquatic life, human health and wildlife) and associated stream design flows and mixing zones. The stream design flow for each water quality criterion was set equal to the same value in the outfall specific spreadsheet. This value was the Q7,10 flow plus the accumulation of long term average effluent flow and any lake intrusion flow, minus any intake flow. For Mercury, which is a bioaccumulative chemical of concern (BCC), a mixing zone was not allowed in the development of PELs for any outfall in accordance with 5-2-11.4(b)(1). For those pollutants included in a multi-discharger WLA, the multi-discharger model was used to ensure that the most stringent water quality criterion is met at the edge of the mixing zone for each segment. This was the 4-day average chronic criterion. The multi-discharger model was also used to ensure that Lake Michigan criteria are met at the end of the last segment in the Indiana Harbor. The preliminary WLA was included as an input in the multi-discharger model and PELs were calculated from the preliminary WLA.

In the multi-discharger model, preliminary WLAs for each outfall were established, if possible, so that the monthly and daily PEQs did not exceed the PELs calculated from the preliminary WLAs. If TBELs were included for the parameter at a final outfall or an internal outfall, then the preliminary WLA was increased to the extent possible to allow the mass-based PELs to exceed the TBELs. In the case of Outfall 009, this included establishing PELs for ammonia-N that were higher than limits requested by the facility for new Internal Outfall 509 as part of a 301(g) variance. The preliminary WLAs were adjusted as necessary so that the calculated PELs did not exceed the PELs calculated using the outfall specific spreadsheets and so that the water quality criterion was not exceeded at the edge of the mixing zone for each segment as determined using the multi-discharger model. For some outfalls, the discharge of one or more pollutants for which a multi-discharger WLA was conducted was not considered significant, so a preliminary WLA was established based on the reported effluent concentration, or if sufficient data were available, reported effluent loading data, but PELs were not calculated as allowed under 5-2-11.5(b)(1).

After assigning a preliminary WLA to each outfall in a segment and entering the WLA into the multi-discharger model, the model calculates the PELs for each outfall, the concentration at the edge of the mixing zone for the segment and the concentration at the end of each segment after complete mixing. The concentration after complete mixing then becomes the background concentration for the next segment. To calculate PELs using the outfall specific spreadsheets, the background concentration for each outfall was calculated assuming complete mixing between outfalls. This was done by entering the WLAs for each outfall into a separate spreadsheet that calculated the background concentration upstream of each outfall. By conducting a multi-discharger WLA in this manner, the background concentration for each outfall was based on the accumulated WLAs for the prior outfalls. Since the WLAs were based in some cases on projected effluent quality, the background concentrations were based on projected loading data. This provided a conservative means of determining the cumulative impact of the outfalls. For those pollutants not included in a multi-discharger WLA, the background concentration for each outfall was based on instream data.

The results of the reasonable potential statistical procedure are included in Tables 2-5. The results show that the discharges from ArcelorMittal Indiana Harbor West Outfalls 002, 009, 010 and 011 have a reasonable potential to exceed a water quality criterion for Mercury.

In addition to establishing WQBELs based on the reasonable potential statistical procedure, IDEM is also required to establish WQBELs under 5-2-11.5(a) "If the commissioner determines that a pollutant or pollutant parameter (either conventional, nonconventional, a toxic substance, or whole effluent toxicity (WET)) is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable narrative criterion or numeric water quality criterion or value under 327 IAC 2-1.5." Chlorine is added to the intake water for zebra and quagga mussel control at concentrations exceeding water quality criteria. Therefore, Chlorine may be discharged from Outfalls 002, 009, 010, and 011 at a level that will cause an excursion above the numeric water quality criterion for Total Residual Chlorine under 2-1.5 and WQBELs for Total Residual Chlorine are required at Outfalls 002, 009, 010, and 011.

For each pollutant receiving TBELs at an internal outfall, and for which water quality criteria or values exist or can be developed, concentration and corresponding mass-based WQBELs were calculated at the final outfall. The WQBELs were set equal to the applicable PELs from the multi-discharger model or the outfall specific spreadsheet. This was done for Outfall 009 (Ammonia-N, Lead and Zinc at new internal Outfall 509) and Outfall 011 (Lead and Zinc at new internal Outfalls 701 and 702). The mass-based WQBELs at the final outfall were compared to the mass-based TBELs. Since the facility is authorized to discharge up to the mass-based TBELs, if the mass-based TBELs exceed the mass-based WQBELs at the final outfall, the pollutant may be discharged at a level that will cause an excursion above a numeric water quality criterion or value under 2-1.5 and WQBELs are required for the pollutant at the final outfall. This was not the case for any pollutant at Outfall 009 or Outfall 011.

Once a determination is made using the reasonable potential provisions under 5-2-11.5 that WQBELs must be included in the permit, the WQBELs are calculated in accordance with 5-2-11.5(d). Under this provision, in the absence of an EPA-approved TMDL, WLAs are calculated

for the protection of acute and chronic aquatic life, wildlife, and human health in accordance with the WLA provisions under 5-2-11.4. The WLAs are then converted into WQBELs in accordance with the WQBEL provisions under 5-2-11.6. The WQBELs are included in Table 7 and were set equal to the PELs calculated for each pollutant.

A wasteload allocation was not conducted for Free Cyanide due to the absence of effluent data for this pollutant of concern. Under 5-2-11.5(b)(2), when effluent data for a pollutant of concern are not available for an existing discharger, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, and, where appropriate, the dilution of the effluent in the receiving water to determine whether it is necessary to require the discharger to collect the data required to make a reasonable potential determination. Based on the presence of Free Cyanide on the 2010 303(d) list for the Indiana Harbor, monitoring for Free Cyanide is being included at all ArcelorMittal outfalls containing process wastewater. Under 5-2-11.5(e), the commissioner may require monitoring for a pollutant of concern even if it is determined that a WQBEL is not required based on a reasonable potential determination. Monitoring was continued or added for Fluoride due to the inclusion of this pollutant in the multi-discharger wasteload allocation.

In addition to the outfalls on the Indiana Harbor Canal and Indiana Harbor, ArcelorMittal Indiana Harbor West Outfall 012 discharges to the forebay of the No. 3 water intake. The No. 3 intake is located on a channel that runs along the west side of the Indiana Harbor breakwall from Lake Michigan, past the No. 3 intake, and to the Indiana Harbor West No. 2 intake. As noted above, this channel is considered the open waters of Lake Michigan. The discharge from Outfall 012 consists of flow from the North Lagoon. The North Lagoon receives treated wastewater from Internal Outfalls 111 (84-inch hot strip mill) and 211 (No. 3 cold mill), noncontact cooling water and stormwater. The facility conducted a dye dilution study in November 2010 to determine the amount of discharge flow from Outfall 012 that is recycled through and how much bypasses the No. 3 intake. The flow that bypasses the No. 3 intake is likely taken into the facility at the No. 2 intake. The study was done for two days with the 84-inch hot strip mill operating and for two days with it not operating. When the 84-inch hot strip mill was operating, the daily average percentage of flow recycled was 89.8% the first day and 88.0% the second day. When the 84-inch hot strip mill was not operating, the daily average percentage of flow recycled was 100% the first day and 99.2% the second day. Based on this study, it would be reasonable to consider that 12% of the Outfall 012 flow bypasses the No. 3 intake and directly enters waters of the state.

ArcelorMittal conducted a special sampling of effluent from Outfall 012 for the renewal of the NPDES permit. Data were collected from June 2004 through December 2004 and additional data were collected from November 2010 through February 2011 to obtain ten months of data. The effluent flow used in the wasteload allocation analysis was determined in accordance with 327 IAC 5-2-11.4(a)(9). Under this provision, the effluent flow used to develop WLAs for industrial dischargers is the highest monthly average flow from the previous two years of monitoring. An alternate effluent flow value may be used if the discharger provides flow data that supports the alternate value. Limited effluent flow data are available for Outfall 012 as data are only available from the special sampling effort. Based on information presented in the November 2010 dye study, the average discharge flow through Outfall 012, prior to recycle

through the No. 3 intake, is 70.0 mgd when both the 84-inch hot strip mill and No. 3 cold mill are operating. Therefore, an effluent flow of 70.0 mgd was used in the wasteload allocation analysis although, based on the dye study, it should be recognized that only 12% of this flow bypasses the No. 3 intake and is discharged directly to waters of the state.

In addition to the aquatic life, human health and wildlife criteria that apply to all waters within the Great Lakes system, there are specific criteria that apply to Lake Michigan. These criteria are included in 327 IAC 2-1.5-8(j). For the pollutants of concern, Lake Michigan criteria are available for Chloride, Fluoride, Dissolved Iron, Sulfate and Total Dissolved Solids. The criteria for Chloride are the same as the aquatic life criteria that apply to all waters within the Great Lakes system. The criteria for Fluoride and Sulfate are more stringent and there are currently no criteria for Dissolved Iron that apply to all waters within the Great Lakes system. The PELs calculated using Lake Michigan criteria were compared to the PELs calculated using the criteria that apply to all waters within the Great Lakes system and the more stringent PELs were used as the applicable PELs.

According to 327 IAC 5-2-11.4(b)(2)(A)(ii)(AA), for discharges to Lake Michigan, a WLA based on a chronic criterion or value shall be set equal to the criterion or value unless an alternate mixing zone demonstration is conducted and approved under 327 IAC 5-2-11.4(b)(4). Therefore, the stream design flows for chronic aquatic life (Q7,10), human health (harmonic mean flow) and wildlife (Q90,10) criteria were set equal to zero. According to 327 IAC 5-2-11.4(b)(2)(A)(i)(AA), for discharges to Lake Michigan, the acute aquatic life criterion or value shall not be exceeded outside the zone of initial dilution and the final acute value shall not be exceeded in the undiluted discharge unless a mixing zone demonstration is conducted and approved under 327 IAC 5-2-11.4(b)(4). There is no Q1,10 for Lake Michigan, therefore, the Q1,10 was set equal to the discharge flow in order to allow for a zone of initial dilution.

To develop wasteload allocations, IDEM utilized the following sources of water quality data for Lake Michigan: IDEM fixed water quality monitoring station LM-W (Lake Michigan at Whiting Waterworks; hardness and pollutant background data) and fixed station LM-DSP (Lake Michigan at Dunes State Park; pH and temperature data).

The results of the reasonable potential statistical procedure are included in Table 6. The results show that the discharge from ArcelorMittal Indiana Harbor East Outfall 012 has a reasonable potential to exceed a water quality criterion for Vanadium and Zinc. The WQBELs are included in Table 7 and were set equal to the PELs calculated for each pollutant.

Internal Outfall 211 has TBELs for Lead, Zinc, Naphthalene and Tetrachloroethylene. Therefore, as was done for Outfalls 009 and 011, mass-based WQBELs were calculated at Outfall 012 for these pollutants. The mass-based WQBELs at the final outfall were compared to the mass-based TBELs. Since the facility is authorized to discharge up to the mass-based TBELs, if the mass-based TBELs exceed the mass-based WQBELs at the final outfall, the pollutant may be discharged at a level that will cause an excursion above a numeric water quality criterion or value under 2-1.5 and WQBELs are required for the pollutant at the final outfall. This was not the case for any pollutant at Outfall 012.

Whole Effluent Toxicity Requirements

The 1997 Indiana Great Lakes regulations included narrative criteria with numeric interpretations for acute (2-1.5-8(b)(1)(E)(ii)) and chronic (2-1.5-8(b)(2)(A)(iv)) whole effluent toxicity (WET) and a procedure for conducting reasonable potential for WET (5-2-11.5(c)(1)). U.S. EPA did not approve the reasonable potential procedure for WET so Indiana is now required under 40 CFR Part 132.6(c) to use the reasonable potential procedure in Paragraphs C.1 and D of Procedure 6 in Appendix F of 40 CFR Part 132.

A 1990 permit modification required ArcelorMittal to conduct chronic whole effluent toxicity (WET) testing using *Ceriodaphnia dubia* and Fathead Minnow monthly for a period of three months at Outfall 011. If toxicity, defined in the permit as 1.0 TUc (i.e. an NOEC of less than 100% effluent), was not demonstrated in any two tests, no further WET testing was required. The value of 1.0 TUc used to define toxicity was based on meeting chronic WET requirements in the undiluted discharge. The facility did demonstrate toxicity (2.0 TUc) to Fathead Minnow in one WET test. Since toxicity was only demonstrated in one WET test, the facility discontinued monitoring for WET.

The characteristics of the treated wastewater from Outfall 011 have changed since the WET tests were conducted in 1990. Blast furnace and sinter plant wastewater once treated and discharged through Outfall 011 is now treated and discharged through Internal Outfall 509 to Outfall 009. New wastewater treatment plants have also been installed to treat process wastewaters from vacuum degassing (Internal Outfall 701) and continuous casting (Internal Outfall 702) operations prior to discharge through Outfall 011. Therefore, the results of the 1990 WET tests are not considered to be representative of the current discharge from Outfall 011 and were not used in a reasonable potential analysis for WET.

The permittee will be required to conduct whole effluent toxicity testing of its effluent discharge from Outfall 009 and Outfall 011 using *Ceriodaphnia dubia* and Fathead Minnow. The terms and conditions of the WET testing are contained in Part I.D. of the NPDES permit. Part I.D.1.c.(2) of the permit states that chemical analysis must accompany each effluent sample taken for bioassay test. The analysis detailed under Part I.A. should be conducted for each effluent sample. The effluent should be sampled using the sample type requirements specified in Part I.A. Questions regarding the WET testing procedures should be addressed to the Office of Water Quality, NPDES Permits Branch.

Acute and chronic toxicity testing is required at Outfall 009 and Outfall 011. Acute toxicity is to be derived from chronic toxicity tests and toxicity is to be reported in terms of acute and chronic toxic units and compared to calculated toxicity reduction evaluation (TRE) triggers. The TRE triggers are set equal to the acute and chronic WLAs for WET in accordance with 327 IAC 5-2-11.6(d). If either an acute or chronic TRE trigger is exceeded, another chronic WET test must be conducted within two weeks. If the results of any two consecutive tests exceed the applicable TRE trigger, ArcelorMittal must conduct a TRE. For each outfall, after the completion of three toxicity tests that do not exceed the acute and chronic TRE triggers, ArcelorMittal may reduce the number of species tested to only include the most sensitive to the toxicity in the effluent. The TRE triggers are shown in Table 7.

Thermal Requirements

The Indiana Harbor Canal and Indiana Harbor shall be capable of supporting a well-balanced, warm water aquatic community. The water quality criteria for temperature applicable to these waterbodies are included in 327 IAC 2-1.5-8(c). Temperature was not a pollutant of initial focus in the Water Quality Guidance for the Great Lakes system under 40 CFR Part 132. Therefore, Indiana was allowed to apply its own temperature criteria to waters within the Great Lakes system when the rules were last revised in 1997 as part of the Great Lakes rulemaking. During this rulemaking, the monthly maximum temperature criteria that were updated in 1990 were retained. Indiana regulations state that the temperature criteria apply outside a mixing zone, but the allowable mixing zone is not established in the rules. IDEM current practice is to allow fifty percent (50%) of the stream flow for mixing to meet temperature criteria.

The implementation procedures under 327 IAC 5-2-11.4 for developing wasteload allocations for point source discharges address temperature under 5-2-11.4(d)(3). This provision states that temperature shall be addressed using a model, approved by the commissioner, that ensures compliance with the water quality criteria for temperature. There is also no specific procedure in the rules for determining whether a discharger is required to have water quality-based effluent limits (WQBELs) for temperature. Therefore, the general provision for making reasonable potential determinations in 5-2-11.5(a) is applicable. This provision establishes that if the commissioner determines that a pollutant or pollutant parameter is or may be discharged into the Great Lakes system at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable narrative or numeric water quality criterion under 2-1.5, the commissioner shall incorporate WQBELs in an NPDES permit that will ensure compliance with the criterion. In making this determination, the commissioner shall exercise best professional judgment, taking into account the source and nature of the discharge, existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and, where appropriate, the dilution of the effluent in the receiving water. The commissioner shall use any valid, relevant, representative information pertaining to the discharge of the pollutant.

The multi-discharger model for the Indiana Harbor Canal/Lake George Canal/Indiana Harbor subwatershed discussed above included five active outfalls discharging to the Indiana Harbor Canal and four active outfalls discharging to the Indiana Harbor that contain a thermal component such as noncontact cooling water or boiler blowdown as a source of wastewater. ArcelorMittal Indiana Harbor – Indiana Harbor West Outfall 002 has a flow of 11.2 mgd consisting mostly of noncontact cooling water; Outfall 009 has a flow of 55.3 mgd with Internal Outfall 509 having a flow of 1.1 mgd and the remaining consisting mostly of noncontact cooling water; Outfall 010 has a flow of 36.6 mgd consisting mostly of noncontact cooling water; Outfall 011 has a flow of 23.4 mgd with new Internal Outfalls 701 and 702 having combined flows of less than 1 mgd and the remaining consisting mostly of noncontact cooling water. The 1986 permit does not include a requirement for the monitoring of effluent temperature. The permit does include a requirement that sets the allowable net plant thermal discharge for Outfalls 001, 002, 009, 010 and 011 at 2.24×10^9 BTU/Hr. Based on the Post Public Notice Addendum included in the Fact Sheet of the 1986 permit, temperature monitoring was removed from the permit because the production at that time did not approach the limitation for thermal output.

The main source of cooling water for ArcelorMittal West Outfall 002 is the No. 1 Intake on the Indiana Harbor. The main source of cooling water for ArcelorMittal West Outfalls 009, 010 and 011 is the No. 2 Intake on Lake Michigan. Since the facility is not required to report effluent temperature, limited data are available. Effluent temperature data were collected in July 1999 and April 2000 as part of the Grand Calumet River TMDL study. Effluent temperature data are also available from the 2009 permit renewal application update and are reported as winter values. The maximum reported temperatures were measured during the 1999 TMDL sampling and were 86 °F at Outfall 002, 97 °F at Outfall 009, 84 °F at Outfall 010 and 82 °F at Outfall 011.

The multi-discharger model accounted for the intrusion of lake water into the Indiana Harbor and Indiana Harbor Canal. The intrusion of lake water produces thermal stratification that ends at the railroad bridge about 0.7 miles upstream of the mouth of the Indiana Harbor Canal. The ArcelorMittal Indiana Harbor Long Carbon (IN0063355) Outfall 001 on the east side of the canal and ArcelorMittal Indiana Harbor – Central WWTP (IN0063711) Outfall 001 and ArcelorMittal West Outfall 002 on the west side of the canal are upstream of the railroad bridge. ArcelorMittal West Outfalls 009 and 010, which are two large sources of non-contact cooling water, are the first two discharges downstream of the railroad bridge. As part of a special condition in the ArcelorMittal Indiana Harbor East (IN0000094) 1996 permit, the facility was required to conduct sampling in the Indiana Harbor Canal downstream of ArcelorMittal Indiana Harbor Long Carbon Outfall 001 and between ArcelorMittal East Outfalls 008 and 011 and in the Indiana Harbor at a point equal distant from ArcelorMittal East Outfalls 011, 014 and 018. Sampling was to be conducted from April through November for two years and at three river depths (one foot below the surface, mid-depth and one foot above the bottom). The facility conducted the sampling in 1997 and 1998 and submitted a summary of the results of this sampling along with an analysis of the thermal impact of the ArcelorMittal discharges to the Indiana Harbor Canal and Indiana Harbor based on the sampling results in a November 19, 2010 report. The report concluded the following: ArcelorMittal East (IN0000094) and ArcelorMittal West (IN0000205) were both operating at reasonably high production rates in 1997 and 1998 as measured by raw steel production; ambient air temperatures were within normal ranges; there have been no significant changes in the flow regimes in the Indiana Harbor Canal since the study was done; and, the study results demonstrate compliance with applicable temperature criteria.

Additional temperature monitoring at multiple depths was conducted in the Indiana Harbor Canal and Indiana Harbor as part of the July 1999 and April 2000 sampling conducted for the Grand Calumet River TMDL study. The sampling included two locations in the Indiana Harbor (just beyond the lighthouse at the outer edge of the Indiana Harbor and in the middle of the Indiana Harbor, just downstream of ArcelorMittal West Outfall 011, the last outfall on the Indiana Harbor), two locations in the Indiana Harbor Canal downstream of the railroad bridge (about 0.6 miles downstream of ArcelorMittal West Outfalls 009 and 010 at the mouth of the Indiana Harbor Canal and about 0.3 miles downstream of ArcelorMittal West Outfalls 009 and 010), one location just downstream from Dickey Road and downstream of the three thermal discharges upstream of the railroad bridge and one location just upstream of ArcelorMittal Indiana Harbor – Central WWTP Outfall 001 which is the ArcelorMittal thermal discharge that is furthest upstream of the railroad bridge. The data showed temperature stratification downstream of the railroad bridge and a decreasing trend in temperature from upstream to downstream. The Indiana Harbor Canal and Indiana Harbor were in compliance with the water quality criteria for

temperature. Effluent temperature and flow data were collected during the July 1999 sampling and effluent temperature data were collected during the April 2000 sampling. The TMDL studies were done after the shutdown of the No. 4 AC power station that discharged through ArcelorMittal East Outfall 018 until about May 1999. A review of historical instream temperature data at IDEM fixed stations on the Indiana Harbor Canal and Indiana Harbor from January 1990 through December 2010 and the fixed station on Lake Michigan from January 1997 through December 2010 shows that the maximum temperature values were recorded in July 1999. The average stream flow during the July 1999 temperature monitoring as recorded at USGS gaging station 04092750 in the Indiana Harbor Canal at Canal Street was 485 cfs which is close to the Q7,10 of 352 cfs. Therefore, the July 1999 temperature monitoring was done during a period that is very close to critical stream conditions.

In addition to the instream sampling, a multi-discharger model was used to assist in the reasonable potential analysis. The multi-discharger model for toxics discussed above was modified to account for temperature. The mixing zone was set at fifty percent (50%) of the stream flow to be consistent with current IDEM practice for mixing zones for temperature. The model does not account for heat dissipation so it represents a conservative, dilution only analysis. The effluent and instream data collected in July 1999 and April 2000 as part of the Grand Calumet River TMDL study were used as inputs to the model to determine if the model could predict the measured instream temperatures. The model predicts an increase in temperature downstream of the railroad bridge beginning with ArcelorMittal West Outfalls 009 and 010 and no exceedance at the edge of any mixing zones for both July 1999 and April 2000. The July 1999 TMDL data show a large decrease in temperature (about 7 °F) from Dickey Road to downstream of ArcelorMittal West Outfalls 009 and 010 in the upper one-half depth of the temperature stratified river with an even larger decrease in the lower one-half depth. There was essentially no further decrease in temperature in the Indiana Harbor during the sampling. The April 2000 TMDL data show a small decrease (about 0.5 °F) from Dickey Road to downstream of Outfalls 009 and 010. However, the temperature did decrease to a larger extent in the Indiana Harbor (about 4 °F). The multi-discharger model is therefore a conservative means of determining the impact of the thermal discharges.

A Q7,10 flow of 352 cfs, long-term average effluent flows, except as noted below, and background temperatures from fixed station IHC-3S were used in the multi-discharger thermal model as were used in the multi-discharger toxics model. The critical months of April through November were modeled to be consistent with the instream sampling requirement in the 1996 ArcelorMittal East permit and the months of June through September were included as one period since the same maximum criterion of 90 °F applies each month. The effluent temperature input to the model for ArcelorMittal Indiana Harbor Long Carbon and ArcelorMittal East was set equal to the maximum temperature reported for the month during the period January 1998 through December 2010 if it was considered representative data. The effluent temperature for ArcelorMittal Indiana Harbor – Central WWTP and ArcelorMittal West was set equal to the July 1999 TMDL data for the June through September period and the greater of the 2009 permit renewal application data or the April 2000 TMDL data for the other months since the permit renewal application data were reported as winter values. The effluent flow for ArcelorMittal West Outfall 009 for the June through September period was set equal to the daily maximum flow due to this outfall having the highest effluent temperature and a significant increase in

discharge flow during this period. The results of the modeling show that the Indiana Harbor Canal and Indiana Harbor will be in compliance with the water quality criteria for temperature during these critical months. Based on the results of the instream sampling and multi-discharger thermal model, the discharges from ArcelorMittal Indiana Harbor West Outfalls 002, 009, 010 and 011 do not have a reasonable potential to exceed a water quality criterion for temperature. Under 5-2-11.5(e), the commissioner may require monitoring for a pollutant of concern even if it is determined that a WQBEL is not required based on a reasonable potential determination. Monitoring for temperature and thermal discharge was added to Outfalls 002, 009, 010 and 011 in the renewal permit.

Antidegradation

New regulations in Indiana governing implementation of antidegradation for discharges to waters within the Great Lakes system became effective in 1997. The regulations were developed in accordance with the Water Quality Guidance for the Great Lakes System at 40 CFR Part 132. The regulations included an antidegradation policy (327 IAC 2-1.5-4), antidegradation implementation procedures for High Quality Waters that are not Outstanding State Resource Waters (OSRWs) (327 IAC 5-2-11.3(b)) and antidegradation implementation procedures for OSRWs (5-2-11.7). The implementation procedures for High Quality Waters and OSRWs distinguish between pollutants that are bioaccumulative chemicals of concern (BCCs) and pollutants that are not BCCs. For waters that are not considered High Quality Waters, the regulations do not allow a lowering of water quality (5-2-11.3(a)).

The Indiana portion of the open waters of Lake Michigan is designated in 2-1.5-19(b)(2) as an OSRW. Therefore, ArcelorMittal Indiana Harbor West Outfall 012, which discharges to Lake Michigan, is subject to the antidegradation implementation procedures for OSRWs in 327 IAC 5-2-11.7. The antidegradation implementation procedures for OSRWs include provisions for discharges to tributaries of OSRWs in 5-2-11.7(a)(2). Since the Indiana Harbor Canal and Indiana Harbor are tributaries to Lake Michigan, the discharges from ArcelorMittal Indiana Harbor West Outfalls 002, 009, 010 and 011 are subject to the antidegradation implementation procedures in 5-2-11.7(a)(2) in addition to those in 5-2-11.3. The procedures in 5-2-11.7(a)(2) are supplemented by Non-Rule Policy Document Water-002-NRD, "Antidegradation Requirements for Outstanding State Resource Waters Inside the Great Lakes Basin."

The Indiana Harbor Canal is considered a High Quality Water for all of the pollutants limited in the ArcelorMittal permit except Oil and Grease since it is included on the 2010 303(d) List for this parameter. The Indiana Harbor is considered a High Quality Water for all of the pollutants limited in the ArcelorMittal permit except Free Cyanide and Mercury since it is included on the 2010 303(d) List for Free Cyanide and for Mercury in fish tissue. Lake Michigan is considered a High Quality Water for all of the pollutants limited in the ArcelorMittal permit except Mercury since it is included on the 2010 303(d) List for Mercury in fish tissue. Mercury is the only pollutant of concern in the ArcelorMittal permit that is a BCC.

After the effluent limitations were established for the proposed permit, a review was done to determine if the permit satisfies the antidegradation requirements in 5-2-11.3 and 5-2-11.7. The

Indiana Harbor Canal is not a High Quality Water for Oil and Grease, so discharges of Oil and Grease are not allowed to cause a lowering of water quality in accordance with 5-2-11.3(a). The Indiana Harbor is not a High Quality Water for Free Cyanide and Mercury, so discharges of Free Cyanide and Mercury are not allowed to cause a lowering of water quality in accordance with 5-2-11.3(a). The Indiana Harbor Canal and Indiana Harbor are High Quality Waters for the other pollutants of concern in the ArcelorMittal permit so in accordance with 5-2-11.3(b), for High Quality Waters that are not designated as an OSRW, no action resulting in a significant lowering of water quality can occur unless an antidegradation demonstration has been completed and approved. Since the Indiana Harbor Canal and Indiana Harbor are tributaries of an OSRW, in accordance with 5-2-11.7(a)(2)(B), the discharges shall not cause a significant lowering of water quality in the OSRW. If a discharge to a tributary of an OSRW causes a significant lowering of water quality in the OSRW, it would not be allowed, regardless of an approvable antidegradation demonstration under 5-2-11.3.

According to 5-2-11.3(b)(1)(A), a significant lowering of water quality occurs if there is a new or increased loading of a BCC from a point source for which a new permit or permit modification would be required. According to 5-2-11.3(b)(1)(B), a significant lowering of water quality occurs if there is a new or increased permit limit for a non-BCC from a point source and the new or increased permit limit will result in both of the following:

(i) A calculated increase in the concentration of the substance outside of the mixing zone, and;

(ii) A lowering of water quality that is greater than a de minimis lowering of water quality.

According to 5-2-11.7(a)(2), for a new or increased discharge of a pollutant or pollutant parameter from a new or existing Great Lakes discharger into a tributary of an OSRW for which a new or increased permit limit would be required, the following apply:

(1) 327 IAC 5-2-11.3(a) and 327 IAC 5-2-11.3(b) apply to the new or increased discharge; and

(2) the discharge shall not cause a significant lowering of water quality in the OSRW.

According to nonrule policy document Water-002-NPD, a new or increased discharge into a tributary of Lake Michigan will not cause a significant lowering of water quality in Lake Michigan if any of several provisions are met, including the following:

> The new or increased discharge into a tributary of Lake Michigan does not cause a significant lowering of water quality in the tributary, as determined under 327 IAC 5-2-11.3(b)(1)(A) or 327 IAC 5-2-11.3(b)(1)(B).

In addition to the antidegradation provisions in 5-2-11.3(b)(1)(A) and 5-2-11.3(b)(1)(B), exemptions and exceptions to antidegradation apply in 5-2-11.3(b)(1)(C). For example, in

accordance with 5-2-11.3(b)(1)(C)(ii), the following does not constitute a significant lowering of water quality:

New limits for an existing permitted discharger that are not a result of changes in pollutant loading, and will not allow an increase in pollutant loading, including new limits that are a result of the following:

(AA) New or improved monitoring data.
(BB) New or improved analytical methods.
(CC) New or modified water quality criteria or values.
(DD) New or modified effluent limitations guidelines, pretreatment standards, or control requirements for POTWs.

Similarly, in addition to the antidegradation implementation provisions in 5-2-11.7(a)(2)(A) and 5-2-11.7(a)(2)(B), exemptions and exceptions apply in 5-2-11.7(a)(2)(C). For example, in accordance with 5-2-11.7(a)(2)(C)(i), the requirements of 5-2-11.7(a)(2) will be considered to have been met when one or more of the items listed in 5-2-11.3(b)(1)(C)(ii) apply.

The antidegradation procedures used in this review apply to point source discharges. The definition of "point source" in 5-1.5-40 applies to the discharge of a pollutant and the definition of "discharge of a pollutant" in 5-1.5-11 includes discharges through pipes that do not lead to treatment works. Therefore, the antidegradation procedures were applied to all final outfalls and to internal outfalls that do not lead to treatment works. Internal Outfalls 701 and 702 discharge to the main scale pit and receive further treatment prior to discharge through Outfall 011. Internal Outfalls 111 and 211 discharge to the North Lagoon prior to discharge through Outfall 012. Therefore, Internal Outfalls 701, 702, 111 and 211 were not considered point source discharges subject to the antidegradation implementation procedures. However, for information purposes, they were included in the antidegradation review. Internal Outfall 509 does not pass through a treatment system prior to discharge through Outfall 009 and was therefore considered a point source discharge subject to the antidegradation implementation procedures.

Tables 8-10 were developed to compare the existing effective limitations to the proposed limitations for each outfall. As noted above, the Indiana Harbor Canal is not a High Quality Water for Oil and Grease and the Indiana Harbor is not a High Quality Water for Mercury so discharges of Oil and Grease to the Indiana Harbor Canal and discharges of Mercury to the Indiana Harbor are not allowed to cause a lowering of water quality in accordance with 5-2-11.3(a). For High Quality Waters, if the permit authorizes a new or increased loading of a BCC (Mercury) or new or increased limits for non-BCCs, further analysis was required to determine if the discharge would cause a significant lowering of water quality under 5-2-11.3. If the permit authorizes a new or increased discharge of a pollutant into a tributary of an OSRW for which a new or increased permit limit would be required, further analysis was also required to determine if the discharge would cause a significant lowering of water quality in the OSRW under 5-2-11.7(a)(2)(B).

A Side Table at the bottom of Table 9 provides an explanation of apparent new permit limits at Internal Outfalls 509, 701 and 702 that are actually due to a change in the way the limits are

being applied in the proposed permit as compared to the current permit. For example, in the current permit, technology-based effluent limitations (TBELs) for the operations with wastewater discharges through Outfalls 009, 010 and 011 were applied at the final outfalls. In the proposed permit, TBELs will be applied at internal outfalls. In the current permit, the facility had a 301(g) variance for discharges of Ammonia-N and Phenols (4AAP) and TBELs for Total Cyanide from the blast furnace and sinter plant operations that applied to Outfalls 009, 010 and 011. A new treatment process for the blast furnace and sinter plant operations will discharge through Internal Outfall 509 and then through Outfall 009. Effluent limitations for blast furnace and sinter plant operations will only apply to Internal Outfall 509 in the proposed permit. In the current permit, at Outfall 011, effluent limitations for Lead, Zinc, Total Suspended Solids and Oil and Grease were also included based on plant operations including, and in addition to, blast furnace and sinter plant operations. A new treatment process for vacuum degassing operations will discharge through Internal Outfall 701 and a new treatment process for continuous casting operations will discharge through Internal Outfall 702. Both of these internal outfalls will discharge through Outfall 011. To determine if there are new or increased permit limits at Internal Outfalls 509, 701 and 702, the limits at these outfalls in the proposed permit were combined and then compared to the combined limits at Outfalls 009, 010 and 011 in the current permit. This comparison was done in the Side Table at the bottom of Table 9.

Footnotes at the bottom of Table 10 provide an explanation of the following: (1) the comparison conducted in the Side Table at the bottom of Table 9; (2) whether the new or increased permit limit for a discharge of Oil and Grease to the Indiana Harbor Canal or the new or increased permit limit for a discharge of Mercury to the Indiana Harbor would cause a lowering of water quality in accordance with 5-2-11.3(a); (3) whether the new or increased loading for a BCC (mercury) or new or increased permit limits for non-BCCs would cause a significant lowering of water quality under 5-2-11.3(b) or a significant lowering of water quality in the OSRW under 5-2-11.7(a)(2)(B); and, (4) whether the new or increased discharge into an OSRW is allowed under 5-2-11.7. The following is a summary of the results of the antidegradation review in Tables 8-10.

As shown in the Side Table at the bottom of Table 9, the combined daily maximum mass TBEL for Oil and Grease is decreasing, but a new combined monthly average TBEL is required in the renewal permit. This is due to new monthly average TBELs for Oil and Grease being required at Internal Outfall 509 and Internal Outfall 702. Monthly average and daily maximum TBELs for Oil and Grease were authorized at Outfall 011 under the current permit, but only a daily maximum limit was applied. The Fact Sheet of the 1986 permit includes the calculation of monthly average and daily maximum TBELs for Oil and Grease at Outfall 011. The TBELs were a combination of the monthly average and daily maximum mass allowed for a number of process operations with separate TBELs. Monthly average TBELs were not provided for several of the operations so only a combined daily maximum TBEL was applied at Outfall 011. A portion of the calculated daily maximum TBEL for Outfall 011 was bubbled to Internal Outfalls 111 and 211. For those operations with monthly average and daily maximum TBELs for Oil and Grease, the monthly average was approximately one-third of the daily maximum. Through application of BPJ, IDEM has determined that for the process operations included under Outfall 011 in the 1986 permit that did not have monthly average TBELs, the monthly average mass limits that were authorized, but not applied, should be calculated using one-third of the daily

maximum TBEL. Since a portion of the daily maximum TBELs was bubbled resulting in lower limits at Outfall 011 than calculated based on the process operations, the monthly average limit that was authorized, but not applied at Outfall 011 was determined to be 500 lbs/day and was calculated as one-third of the existing daily maximum limit of 1,500 lbs/day. The new combined monthly average TBEL does not allow an increase above what was authorized, but not applied in the current permit. The new TBELs at Internal Outfalls 509 and 702 are a new application of Federal Effluent Limitations Guidelines and fall under the antidegradation exemption in 5-2-11.3(b)(1)(C)(ii)(DD). Therefore, the new limits do not cause a significant lowering of water quality and antidegradation under 5-2-11.3(b) is satisfied. This exemption applies to 5-2-11.7(a)(2) so the new limits do not cause a significant lowering of water quality in the OSRW.

The Indiana Harbor Canal is not a High Quality Water for Oil and Grease, so antidegradation for the discharge of Oil and Grease from Internal Outfall 509 was implemented under 5-2-11.3(a). This provision does not allow a lowering of water quality for Oil and Grease that prevents the attainment of the water quality criterion. Indiana does not currently have a numeric water quality criterion for Oil and Grease that applies to the Indiana Harbor Canal. When NPDES permit number IN0000205 was last renewed in 1986, a numeric water quality criterion for Total Oils of 10 mg/l applied to the Indiana Harbor Canal. This criterion was not retained when the water quality standards applicable to the Indiana Harbor Canal were revised in 1990 and a water quality criterion for Oil and Grease was not included in the 1997 Great Lakes system rulemaking. The narrative water quality criteria that apply to the Indiana Harbor Canal do establish a water quality condition at 2-1.5-8(b)(1)(C) of being free from oil or other substances that produce a visible oil sheen in such degree as to create a nuisance. IDEM has used an Oil and Grease concentration of 10 mg/l to interpret this narrative criterion. A new monthly average TBEL for Oil and Grease is required at Internal Outfall 509. The monthly average TBEL does not result in a monthly average Oil and Grease concentration of greater than 10 mg/l at final Outfall 009 to meet the narrative criterion. This will ensure that the new limit does not result in a lowering of water quality for Oil and Grease in the Indiana Harbor Canal and antidegradation under 5-2-11.3(a) is satisfied.

New limits for Mercury are required at Outfalls 002, 009, 010 and 011 based on a reasonable potential analysis using data collected in 1999. Since the permit was last renewed in 1986, more stringent water quality criteria for Mercury have become effective and a new analytical method has become available that allows Mercury in the discharge to be quantified. The new limits for Mercury are a result of the following items in the antidegradation exemption in 5-2-11.3(b)(1)(C)(ii):

(AA) New or improved monitoring data.
(BB) New or improved analytical methods.
(CC) New or modified water quality criteria or values.

The new limits for Mercury are not a result of changes in pollutant loading and will not allow an increase in pollutant loading since the projected effluent quality is greater than the proposed effluent limits and the existing discharge flow was used to calculate the proposed mass limits. Therefore, the new limits for Mercury at Outfall 011 do not cause a lowering of water quality for Mercury and antidegradation under 5-2-11.3(a) is satisfied, and the new limits for Mercury at

Outfalls 002, 009 and 010 do not cause a significant lowering of water quality for Mercury and antidegradation under 5-2-11.3(b) is satisfied. Since this same exemption applies to 5-2-11.7(a)(2), the new limits for Mercury at Outfalls 002, 009, 010 and 011 do not cause a significant lowering of water quality in the OSRW.

New mass limits for Total Residual Chlorine are required at Outfalls 002, 009, 010 and 011. The current permit only has concentration limits at these outfalls and they are less stringent than the proposed concentration limits. The existing effluent flow was used to calculate the WQBELs for the proposed permit so the new mass limits will not result in a calculated concentration increase outside of the mixing zone under 5-2-11.3(b)(1)(B)(i). Therefore, the new mass limits will not cause a significant lowering of water quality and antidegradation under 5-2-11.3(b) is satisfied. Since the new limits do not cause a significant lowering of water quality under 5-2-11.3(b)(1)(B), they do not cause a significant lowering of water quality in the OSRW in accordance with Non-Rule Policy Document Water-002-NPD.

A new concentration TBEL for 2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF) is required at Internal Outfall 509. Water quality criteria are not available for this pollutant and the concentration TBEL is set at less than the minimum level. A TBEL for this pollutant was added to the sintering subcategory under 40 CFR Part 420.23(a) during the 2002 revision of the Federal Effluent Limitations Guidelines for the Iron and Steel Manufacturing Point Source Category. Therefore, a TBEL for this pollutant was not applicable when the 1986 permit was issued. The production related to sintering listed in the Fact Sheet of the 1986 permit is 3,829 tons/day whereas the production related to sintering used to calculate TBELs in the permit renewal is 3,800 tons/day. The new limit is not a result of changes in pollutant loading and, since the production has not increased, will not allow an increase in pollutant loading because the limit is set at less than the minimum level and the facility has installed treatment to meet the new TBEL. The new TBEL is a result of the application of a new Federal Effluent Limitation Guideline and falls under the antidegradation exemption in 5-2-11.3(b)(1)(C)(ii)(DD) so it does not cause a significant lowering of water quality and antidegradation under 5-2-11.3(b) is satisfied. This exemption also applies to 5-2-11.7(a)(2) so the new limit does not cause a significant lowering of water quality in the OSRW.

New TBELs for Naphthalene and Tetrachloroethylene are required at Internal Outfall 211 as a result of the new application of TBELs at this outfall. The TBELs for these pollutants were deferred under the 1986 permit pending a toxic organic pollutant study at Internal Outfall 211 to determine if limits were needed. The Fact Sheet of the 1990 permit modification states that the study was submitted in February 1988 and the results indicated that it was not appropriate to include limits for toxic organic pollutants at that time. The Fact Sheet of the 1986 permit does not include the calculation of daily maximum TBELs for Naphthalene and Tetrachloroethylene. Using the production numbers in the 1986 permit (4365 tons/day 40 CFR 420.103(a)(3), 1774 kkg/day 40 CFR 103(a)(4) and 2406.5 kkg/day 40 CFR 103(a)(5)) the daily maximum TBELs would have been 2.12 lbs/day for Naphthalene and 3.18 lbs/day for Tetrachloroethylene. Therefore, the new limits do not allow an increase above what was authorized, but not applied in the current permit. The new TBELs are a new application of Federal Effluent Limitations Guidelines and fall under the antidegradation exemption in 5-2-11.7(b)(2)(D) so they are allowed and antidegradation under 5-2-11.7 is satisfied.

A new monthly average TBEL for Oil and Grease is required at Internal Outfall 411 which is a mathematical combination of the discharges from Internal Outfalls 111 and 211. Monthly average and daily maximum TBELs for Oil and Grease were authorized for the combination of Internal Outfalls 111 and 211 under the current permit, but only a daily maximum limit was applied. The Fact Sheet of the 1986 permit includes the calculation of monthly average and daily maximum TBELs for Oil and Grease at Internal Outfalls 111 and 211. The TBELs were a combination of the monthly average and daily maximum mass allowed for several process operations with separate TBELs. Monthly average TBELs were not provided for the Hot Strip Mill under 40 CFR 420.72(c)(1). A portion of the calculated daily maximum TBELs for other process operations at the facility were also bubbled to Internal Outfalls 111 and 211. Through application of BPJ, IDEM has calculated for the permit renewal, based on current production, monthly average mass limits for the 84-inch Hot Strip Mill at one-third of the daily maximum. In the Fact Sheet of the 1986 permit, the combined monthly average allowance for the process operations contributing to Internal Outfalls 111 and 211 that had monthly average TBELs was 321.31 lbs/day and the daily maximum TBEL for the Hot Strip Mill was 3142.2 lbs/day. The amount of daily maximum mass that was bubbled to Internal Outfalls 111 and 211 was 1154 lbs/day. The monthly average mass for the Hot Strip Mill calculated as one-third of the daily maximum is 1047.4 lbs/day. The monthly average mass bubbled calculated through BPJ as one-third of the daily maximum is 385 lbs/day. The monthly average Oil and Grease limit for Internal Outfalls 111 and 211 that was authorized, but not applied in the 1986 permit is 1754 lbs/day. The proposed monthly average TBEL for Oil and Grease at Internal Outfall 411 in the renewal permit is 1048 lbs/day. Therefore, the new monthly average limit does not allow an increase above what was authorized, but not applied in the current permit. The new TBEL is a new application of Federal Effluent Limitations Guidelines and falls under the antidegradation exemption in 5-2-11.7(b)(2)(D) so it is allowed and antidegradation under 5-2-11.7 is satisfied.

New limits for Vanadium and Zinc are required at Outfall 012 based on a reasonable potential analysis using data collected for the permit renewal. The new limits are a result of the following item in the antidegradation exemption in 5-2-11.7(b)(2):

(A) New or improved monitoring data.

The new limits for Vanadium and Zinc at Outfall 012 are not a result of changes in pollutant loading and will not allow an increase in pollutant loading since the projected effluent quality is greater than the proposed effluent limits and the existing discharge flow was used to calculate the proposed mass limits. The new limits fall under the antidegradation exemption in 5-2-11.7(b)(2)(A) so they are allowed and antidegradation under 5-2-11.7 is satisfied.

A complete antidegradation review of the proposed ArcelorMittal permit is included in Tables 8-10. Based on the antidegradation review, the Department has determined that the proposed permit complies with the antidegradation policy found in 2-1.5-4 and an antidegradation demonstration is not required.

The permittee is prohibited from undertaking any deliberate action that would result in a new or increased discharge of a BCC or a new or increased permit limit for a pollutant or pollutant

parameter that is not a BCC unless one (1) of the following is completed prior to the commencement of the action; (i) Information is submitted to the commissioner demonstrating that the proposed new or increased discharge will not cause a significant lowering of water quality; (ii) An antidegradation demonstration submitted and approved in accordance with 5-2-11.3.

TABLE 2 REASONABLE POTENTIAL TO EXCEED

ARCELORMITTAL INDIANA HARBOR
INDIANA HARBOR WEST
OUTFALL 002 (11.2 mgd)

PARAMETER	MONTHLY AVERAGE					DAILY MAXIMUM					PEL		PEQ > PEL	
	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Monthly Average@	Daily Maximum	Monthly Average	Daily Maximum
Mercury (ng/l) #					**9.1**	1.46	1	0.6	6.2	**9.1**	**1.3**	**3.2**	**Yes**	Yes
Chloride (mg/l) $					**150**	39.6	2	0.6	3.8	**150**	**160**	**310**	No	No
Sulfate (mg/l) $					**140**	45.4	3	0.6	3.0	**140**	**150**	**300**	No	No
Ammonia-N (mg/l) ** :														
Summer %,!					**0.19**	0.05	2	0.6	3.8	**0.19**	**0.41**	**0.82**	No	No
Winter %,!					**0.19**	0.05	2	0.6	3.8	**0.19**	**0.41**	**0.82**	No	No

** Effluent data were obtained from the July 1999 TMDL study and from the June 2009 Form 2C.

Effluent data were obtained from the July 1999 TMDL study.

$ Effluent data were obtained from the July 1999 and April 2000 TMDL studies and, except for chloride, from the June 2009 Form 2C.

% Summer months are July through September, and winter months are October through June.

! Seasonal PEQs were not developed since less than one year of data are available.

@ Monthly average PELs were calculated based on the applicable sampling frequency in a month.

7/7/2011

TABLE 3 REASONABLE POTENTIAL TO EXCEED

ARCELORMITTAL INDIANA HARBOR
INDIANA HARBOR WEST
OUTFALL 009 (55.3 mgd)

PARAMETER	MONTHLY AVERAGE					DAILY MAXIMUM					PEL		PEQ > PEL	
	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Monthly Average@	Daily Maximum	Monthly Average	Daily Maximum
Lead (ug/l) **					8.4					21	11	21	No	No
Mercury (ng/l) #					10	1.61	1	0.6	6.2	10	1.3	3.2	Yes	Yes
Zinc (ug/l) **					36					56	37	74	No	No
Chloride (mg/l) *					120	96	20	0.5	1.3	120	130	260	No	No
Fluoride (mg/l) *					1.6	1.2	20	0.5	1.3	1.6	1.6	3.1	No	No
Sulfate (mg/l) *					120	96	20	0.3	1.2	120	130	260	No	No
Ammonia-N (mg/l) $:														
Summer %					1.6					3.2	1.6	3.3	No	No
Winter %					1.6					3.2	1.6	3.3	No	No

* Effluent data were obtained from MMRs for the period July 2005 through June 2010.

** The monthly and daily PEQs are estimated values due to the addition of Internal Outfall 509. The estimated values are based on July 1999 TMDL study data for the existing discharge and the monthly and daily TBELs for Internal Outfall 509.

Effluent data were obtained from the July 1999 TMDL study.

$ The monthly and daily PEQs are estimated values due to the addition of Internal Outfall 509. The estimated values are based on the maximum of seasonal PEQs (0.38 mg/l monthly average and 0.58 daily maximum) developed using MMR data for the existing discharge for the period July 2005 through June 2010 and the monthly and daily TBELs for Internal Outfall 509 (550 lbs/day monthly average and 1200 lbs/day daily maximum).

% Summer months are July through September, and winter months are October through June.

@ Monthly average PELs were calculated based on the applicable sampling frequency in a month.

7/7/2011

TABLE 4 **REASONABLE POTENTIAL TO EXCEED**

ARCELORMITTAL INDIANA HARBOR
INDIANA HARBOR WEST
OUTFALL 010 (36.6 mgd)

PARAMETER	MONTHLY AVERAGE					DAILY MAXIMUM					PEL		PEQ > PEL	
	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Monthly Average@	Daily Maximum	Monthly Average	Daily Maximum
Mercury (ng/l) #					**16**	2.57	1	0.6	6.2	**16**	**1.3**	**3.2**	**Yes**	**Yes**
Chloride (mg/l) *					**120**	96	20	0.5	1.3	**120**	**130**	**260**	No	No
Fluoride (mg/l) *					**1.4**	1.1	20	0.5	1.3	**1.4**	**1.4**	**2.8**	No	No
Sulfate (mg/l) *					**100**	86	20	0.3	1.2	**100**	**110**	**230**	No	No
Ammonia-N (mg/l) * :														
Summer %	0.26	15	0.4	1.3	**0.34**	0.51	66	0.5	1.0	**0.51**	**0.45**	**0.90**	No	No
Winter %	0.42	45	0.4	1.0	**0.42**	0.65	193	0.6	0.9	**0.59**	**0.45**	**0.90**	No	No

* Effluent data were obtained from MMRs for the period July 2005 through June 2010.

Effluent data were obtained from the July 1999 TMDL study.

% Summer months are July through September, and winter months are October through June.

@ Monthly average PELs were calculated based on the applicable sampling frequency in a month.

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TABLE 5 **REASONABLE POTENTIAL TO EXCEED**

ARCELORMITTAL INDIANA HARBOR
INDIANA HARBOR WEST
OUTFALL 011 (23.4 mgd)

PARAMETER	MONTHLY AVERAGE					DAILY MAXIMUM					PEL		PEQ > PEL	
	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Monthly Average@	Daily Maximum	Monthly Average	Daily Maximum
Lead (ug/l) *	13	41	0.8	1.1	**14**	36	176	1.1	0.8	**29**	**26**	**52**	No	No
Mercury (ng/l) #					**3.5**	0.56	1	0.6	6.2	**3.5**	**1.3**	**3.2**	**Yes**	**Yes**
Zinc (ug/l) **	110	18	0.6	1.4	**150**	240	77	0.9	0.9	**220**	**180**	**350**	No	No
Chloride (mg/l) *					**110**	96	19	0.2	1.1	**110**	**120**	**250**	No	No
Fluoride (mg/l) *					**3.1**	2.4	19	0.5	1.3	**3.1**	**3.1**	**6.2**	No	No
Sulfate (mg/l) *					**97**	88	19	0.2	1.1	**97**	**110**	**230**	No	No
Ammonia-N (mg/l) * :														
Summer %	0.66	15	0.9	1.8	**1.2**	1.4	66	1.2	0.9	**1.3**	**1.6**	**3.1**	No	No
Winter %	1.4	45	1.2	1.1	**1.5**	3.2	194	1.7	0.8	**2.6**	**1.6**	**3.1**	No	No

* Effluent data were obtained from MMRs for the period July 2005 through June 2010.

** Effluent data were obtained from MMRs for the period January 2009 through June 2010.

Effluent data were obtained from the July 1999 TMDL study.

% Summer months are July through September, and winter months are October through June.

@ Monthly average PELs were calculated based on the applicable sampling frequency in a month.

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TABLE 6 REASONABLE POTENTIAL TO EXCEED

ARCELORMITTAL INDIANA HARBOR
INDIANA HARBOR WEST
OUTFALL 012 (70.0 mgd)

PARAMETER*	MONTHLY AVERAGE					DAILY MAXIMUM					PEL		PEQ > PEL	
	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Maximum Effluent Value	Count	C.V.	M.F.	PEQ	Monthly Average@	Daily Maximum	Monthly Average	Daily Maximum
Cadmium (ug/l)	2	11	0.0	1.0	**2**	2	48	0.0	1.0	**2.0**	**2.6**	**5.3**	No	No
Total Chromium (ug/l)	5.8	11	0.3	1.3	**7.5**	12	49	0.4	1.0	**12**	**100**	**200**	No	No
Copper (ug/l)	10	11	0.05	1.0	**10**	10	49	0.05	1.0	**10**	**10**	**20**	No	No
Dissolved Iron (ug/l)	74	10	0.1	1.1	**81**	98	41	0.2	1.0	**98**	**250**	**490**	No	No
Lead (ug/l)	7.5	11	0.0	1.0	**7.5**	7.5	49	0.0	1.0	**7.5**	**8.1**	**16**	No	No
Nickel (ug/l)	22	11	0.3	1.3	**29**	52	49	0.5	1.0	**52**	**57**	**110**	No	No
Vanadium (ug/l)	46	10	1.0	2.3	**110**	160	41	2.0	1.2	**190**	**22**	**44**	**Yes**	Yes
Zinc (ug/l)	99	11	0.8	1.9	**190**	330	49	1.6	1.1	**360**	**130**	**260**	**Yes**	Yes
Total Dissolved Solids (mg/l)	257	10	0.1	1.1	**280**	300	41	0.2	1.0	**300**	**610**	**1200**	No	No
Chloride (mg/l)	42	11	0.1	1.1	**46**	58	48	0.2	1.0	**58**	**190**	**380**	No	No
Fluoride (mg/l)	0.53	10	0.2	1.2	**0.64**	0.56	42	0.3	1.0	**0.56**	**0.82**	**1.6**	No	No
Sulfate (mg/l)	79	10	0.4	1.5	**120**	170	42	0.6	1.1	**190**	**200**	**410**	No	No
Ammonia-N (mg/l) :														
Summer %,!	0.31	10	0.5	1.6	**0.50**	0.82	42	0.9	1.1	**0.90**	**0.54**	**1.1**	No	No
Winter %,!	0.31	10	0.5	1.6	**0.50**	0.82	42	0.9	1.1	**0.90**	**0.55**	**1.1**	No	No

* Effluent data were obtained from the June 2009 permit renewal application update and additional information submitted in January 2011 and April 2011.

% Summer months are July through September, and winter months are October through June.

! Seasonal PEQs were not developed since less than one year of data are available.

@ Monthly average PELs were calculated based on the applicable sampling frequency in a month.

TABLE 7
WATER QUALITY-BASED EFFLUENT LIMITATIONS
FOR ARCELORMITTAL INDIANA HARBOR - INDIANA HARBOR WEST

Parameter	Quantity or Loading			Quality or Concentration		
	Monthly Average	Daily Maximum	Units	Monthly Average @	Daily Maximum	Units
Outfall 002 (11.2 mgd)						
Mercury	0.00012	0.00030	lbs/day	1.3	3.2	ng/l
Total Residual Chlorine	1.5	3.5	lbs/day	16	37	ug/l
Outfall 009 (55.3 mgd)						
Lead	5.1	9.7	lbs/day	11	21	ug/l
Mercury	0.00060	0.0015	lbs/day	1.3	3.2	ng/l
Zinc	17	34	lbs/day	37	74	ug/l
Ammonia (as N)						
Summer +	740	1,500	lbs/day	1,600	3,300	ug/l
Winter +	740	1,500	lbs/day	1,600	3,300	ug/l
Total Residual Chlorine	5.5	13	lbs/day	12	28	ug/l
Whole Effluent Toxicity (WET)						
Acute #					1.0	TUa
Chronic &				2.2		TUc
Outfall 010 (36.6 mgd)						
Mercury	0.00040	0.00098	lbs/day	1.3	3.2	ng/l
Total Residual Chlorine	3.7	8.6	lbs/day	12	28	ug/l
Outfall 011 (23.4 mgd)						
Lead	5.1	10	lbs/day	26	52	ug/l
Mercury	0.00025	0.00062	lbs/day	1.3	3.2	ng/l
Zinc	35	68	lbs/day	180	350	ug/l
Total Residual Chlorine	2.5	5.9	lbs/day	13	30	ug/l
Whole Effluent Toxicity (WET)						
Acute #					1.0	TUa
Chronic &				5.8		TUc
Outfall 012 (70.0 mgd)						
Lead	4.7	9.3	lbs/day	8.1	16	ug/l
Zinc	76	150	lbs/day	130	260	ug/l
Vanadium	13	26	lbs/day	22	44	ug/l
Naphthalene	12	25	lbs/day	21	43	ug/l
Tetrachloroethylene	29	58	lbs/day	49	99	ug/l

@ Monthly average WQBELs were calculated based on the applicable sampling frequency in a month, except for WET.

+ Summer months are July through September, and Winter months are October through June.

This value is the Toxicity Reduction Evaluation (TRE) trigger for acute WET testing.

& This value is the Toxicity Reduction Evaluation (TRE) trigger for chronic WET testing.

7/7/2011

TABLE 8
ANTIDEGRADATION
FOR ARCELORMITTAL INDIANA HARBOR - INDIANA HARBOR WEST

Parameter	Existing Permit Limits				Proposed Permit Limits				New or Increased Permit Limit for a Non-BCC or New or Increased Loading of a BCC?			
	Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Outfall 002 (11.2 mgd)												
Total Suspended Solids	Report	Report	Report	Report	Report	Report	Report	Report				
Oil & Grease	--	--	Report	Report	Report	Report	Report	Report				
Mercury	--	--	--	--	0.00012	0.00030	0.0013	0.0032	New (1)	New (1)	New (1)	New (1)
Fluoride	--	--	--	--	Report	Report	Report	Report				
Free Cyanide	--	--	--	--	Report	Report	Report	Report				
Total Residual Oxidants	--	--	--	50	--	--	--	--				
Total Residual Chlorine	--	--	20	40	1.5	3.5	16	37	New (2)	New (2)	No	No
Temperature (°F)	--	--	--	--	--	--	Report	Report				
Thermal Discharge (BTU/Hr.)	--	--	--	--	Report	Report	--	--				
pH (s.u.)	--	--	6.0 - 9.5		--	--	6.0 - 9.0				No	
Outfalls 003, 004, 005 (Emergency Overflow)												
Total Suspended Solids	Report	Report	Report	Report								
Oil & Grease	--	--	Report	Report								
Lead	Report	Report	Report	Report								
Tin	Report	Report	Report	Report								
Zinc	Report	Report	Report	Report								
Ammonia (as N)	Report	Report	Report	Report								
Total Cyanide	Report	Report	Report	Report								
Phenols (4AAP)	Report	Report	Report	Report								
pH (s.u.)	--	--	Report	Report	**Outfalls 003, 004 and 005 Removed from Permit**							
Outfall 008 (Emergency Overflow)												
Total Suspended Solids	Report	Report	Report	Report								
Oil & Grease	Report	Report	Report	Report								
Ammonia (as N)	Report	Report	Report	Report								
Total Cyanide	Report	Report	Report	Report								
Phenols (4AAP)	Report	Report	Report	Report								
Benzene	Report	Report	Report	Report								
Benzo(a)pyrene	Report	Report	Report	Report								
Naphthalene	Report	Report	Report	Report								
pH (s.u.)	--	--	Report	Report	**Outfall 008 Removed from Permit**							
Outfall 009 (55.3 mgd)												
Total Suspended Solids	Report	Report	Report	Report	Report	Report	Report	Report				
Oil & Grease	--	--	Report	Report	Report	Report	Report	Report				
Iron	--	--	Report	Report	--	--	--	--				
Lead	--	--	--	--	Report	Report	Report	Report				
Mercury	--	--	--	--	0.00060	0.0015	0.0013	0.0032	New (1)	New (1)	New (1)	New (1)
Zinc	--	--	--	--	Report	Report	Report	Report				
Chloride	--	--	Report	Report	--	--	--	--				
Fluoride	--	--	Report	Report	Report	Report	Report	Report				
Sulfate	--	--	Report	Report	--	--	--	--				
Ammonia (as N)	84 (Net)	236 (Net)	Report	Report	Report	Report	Report	Report				
Free Cyanide	--	--	--	--	Report	Report	Report	Report				
Total Cyanide	Report*	Report*	Report	Report	--	--	--	--				
Phenols (4AAP)	--	4.4 (Net)	Report	Report	Report	Report	Report	Report				
Total Residual Oxidants	--	--	--	50	--	--	--	--				
Total Residual Chlorine	--	--	20	40	5.5	13	12	28	New (2)	New (2)	No	No
Temperature (°F)	--	--	--	--	--	--	Report	Report				
Thermal Discharge (BTU/Hr.)	--	--	--	--	Report	Report	--	--				
pH (s.u.)	--	--	6.0 - 9.0		--	--	6.0 - 9.0				No	
Internal Outfall 509												
Total Suspended Solids					736	2,213	Report	Report	No	No		
Oil & Grease					38.1	114	Report	Report	New (3)	No		
Lead					2.98	8.95	Report	Report	No	No		
Zinc	**New Outfall**				4.46	13.4	Report	Report	No	No		
Ammonia (as N)					550	1,200	Report	Report	No	No		
Total Cyanide					29.8	59.6	Report	Report	No	No		
Phenols (4AAP)					Report	21	Report	Report		No		
2,3,7,8 - TCDF					--	--	--	$<10x10^{-7}$		New (4)		

TABLE 9
ANTIDEGRADATION
FOR ARCELORMITTAL INDIANA HARBOR - INDIANA HARBOR WEST

Parameter	Existing Permit Limits				Proposed Permit Limits				New or Increased Permit Limit for a Non-BCC or New or Increased Loading of a BCC?			
	Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Outfall 010 (36.6 mgd)												
Total Suspended Solids	Report	Report	Report	Report	Report	Report	Report	Report				
Oil & Grease	--	--	Report	Report	Report	Report	Report	Report				
Iron	--	--	Report	Report	--	--	--	--				
Lead	--	--	--	--	Report	Report	Report	Report				
Mercury	--	--	--	--	0.00040	0.00098	0.0013	0.0032	New (1)	New (1)	New (1)	New (1)
Zinc	--	--	--	--	Report	Report	Report	Report				
Chloride	--	--	Report	Report	--	--	--	--				
Fluoride	--	--	Report	Report	Report	Report	Report	Report				
Sulfate	--	--	Report	Report	--	--	--	--				
Ammonia (as N)	180 (Net)	402 (Net)	Report	Report	Report	Report	Report	Report				
Free Cyanide	--	--	--	--	Report	Report	Report	Report				
Total Cyanide	Report*	Report*	Report	Report	--	--	--	--				
Phenols (4AAP)	--	6.6 (Net)	Report	Report	Report	Report	Report	Report				
Total Residual Oxidants	--	--	--	50	--	--	--	--				
Total Residual Chlorine	--	--	20	40	3.7	8.6	12	28	New (2)	New (2)	No	No
Temperature (°F)	--	--	--	--	--	--	Report	Report				
Thermal Discharge (BTU/Hr.)	--	--	--	--	Report	Report	--	--				
pH (s.u.)	--	--	6.0 - 9.0		--	--	6.0 - 9.0				No	
Outfall 011 (23.4 mgd)												
Total Suspended Solids	3,425	9,111	Report	Report	Report	Report	Report	Report				
Oil & Grease	--	1,500	Report	Report	Report	Report	Report	Report				
Iron	--	--	Report	Report	--	--	--	--				
Lead	10.19	30.58	Report	Report	Report	Report	Report	Report				
Mercury	--	--	--	--	0.00025	0.00062	0.0013	0.0032	New (5)	New (5)	New (5)	New (5)
Zinc	24.70	62.00	Report	Report	Report	Report	Report	Report				
Chloride	--	--	Report	Report	--	--	--	--				
Fluoride	--	--	Report	Report	Report	Report	Report	Report				
Sulfate	--	--	Report	Report	--	--	--	--				
Ammonia (as N)	336 (Net)	812 (Net)	Report	Report	Report	Report	Report	Report				
Free Cyanide					Report	Report	Report	Report				
Total Cyanide	31.38*	62.70*	Report	Report	--	--	--	--				
Phenols (4AAP)	--	10.0 (Net)	Report	Report	Report	Report	Report	Report				
Total Residual Oxidants	--	--	--	50	--	--	--	--				
Total Residual Chlorine	--	--	20	40	2.5	5.9	13	30	New (2)	New (2)	No	No
Temperature (°F)	--	--	--	--	--	--	Report	Report				
Thermal Discharge (BTU/Hr.)	--	--	--	--	Report	Report	--	--				
pH (s.u.)	--	--	6.0 - 9.0		--	--	6.0 - 9.0				No	
Internal Outfall 701												
Total Suspended Solids	New Outfall				21.2	59.4	Report	Report	No	No		
Lead					0.255	0.764	Report	Report	No	No		
Zinc					0.382	1.15	Report	Report	No	No		
Internal Outfall 702												
Total Suspended Solids	New Outfall				60.3	169	Report	Report	No	No		
Oil & Grease					24.0	72.4	Report	Report	New (6)	No		
Lead					0.724	2.17	Report	Report	No	No		
Zinc					1.08	3.26	Report	Report	No	No		

Side Table [a] Combined Outfalls 009, 010 and 011	Existing Permit Limits				Combination of Proposed 009 (or 509), 010 and 011 (or 701 and 702)				New or Increased Permit Limit for a Non-BCC or New or Increased Loading of a BCC?			
Total Suspended Solids	3,425	9,111	Report	Report	817.5	2,441.4	Report	Report	No	No		
Oil & Grease	--	1,500	Report	Report	62.1	186.4	Report	Report	New (b)	No		
Lead	10.19	30.58	Report	Report	3.959	11.884	Report	Report	No	No		
Zinc	24.70	62.00	Report	Report	5.922	17.81	Report	Report	No	No		
Ammonia (as N)	600 (Net)	1450 (Net)	Report	Report	550	1,200	Report	Report	No	No		
Total Cyanide	31.38	62.70	Report	Report	29.8	59.6	Report	Report	No	No		
Phenols (4AAP)	--	21 (Net)	Report	Report	Report	21	Report	Report		No		
pH (s.u.)	--	--	6.0 - 9.0		--	--	6.0 - 9.0				No	

TABLE 10
ANTIDEGRADATION
FOR ARCELORMITTAL INDIANA HARBOR - INDIANA HARBOR WEST

Parameter	Existing Permit Limits				Proposed Permit Limits				New or Increased Permit Limit for a Non-BCC or New or Increased Loading of a BCC?			
	Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)		Loading (lbs/day)		Concentration (ug/l)	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
Outfall 012 (70.0 mgd)												
Total Suspended Solids	New Outfall				Report	Report	Report	Report				
Oil & Grease					Report	Report	Report	Report				
Lead					Report	Report	Report	Report				
Mercury					Report	Report	Report	Report				
Vanadium					13	26	22	44	New (7)	New (7)	New (7)	New (7)
Zinc					76	150	130	260	New (7)	New (7)	New (7)	New (7)
Ammonia (as N)					Report	Report	Report	Report				
pH (s.u.)					--	--	6.0 - 9.0				New (8)	
Internal Outfall 111												
Total Suspended Solids	5,663	14,576	Report	Report	Report	Report	Report	Report				
Oil & Grease	Report	5,344	Report	Report	Report	Report	Report	Report				
Iron	Report	Report	Report	Report	--	--	--	--				
pH (s.u.)	--	--	6.0 - 9.0		--	--	--	--				
Internal Outfall 211												
Total Suspended Solids	Report	Report	Report	Report	Report	Report	Report	Report				
Oil & Grease	Report	Report	Report	Report	Report	Report	Report	Report				
Lead	5.28	15.83	Report	Report	3.25	9.3	Report	Report	No	No		
Zinc	5.25	15.70	Report	Report	3.22	9.65	Report	Report	No	No		
Naphthalene	--	--	--	--	--	1.11	--	Report		New (9)		
Tetrachloroethylene	--	--	--	--	--	1.68	--	Report		New (9)		
pH (s.u.)	--	--	6.0 - 9.5		--	--	--	--				
Internal Outfall 411+ (Combined 111/211)												
Total Suspended Solids	5,663	14,576	Report	Report	4,381	11,365	Report	Report	No	No		
Oil & Grease	Report	5,344	Report	Report	1,048	3,089	Report	Report	New (10)	No		

Footnotes:

* The sum of the monthly average total cyanide mass values at Outfalls 009, 010 and 011 shall not exceed the monthly average mass limits at Outfall 011 and the sum of the daily maximum total cyanide mass values at Outfalls 009, 010 and 011 shall not exceed the daily maximum mass limits at Outfall 011.

\+ Outfall 411 is not mentioned in the existing permit, but is an administrative construct to track compliance with the combined discharges of oil & grease and TSS from Outfalls 111 and 211. In the existing permit, when Outfall 211 is not discharging through Outfall 111, oil & grease and TSS are measured concurrently at Outfalls 111 and 211 and the sum of the mass loadings is compared to the limits. Outfall 211 actually does not discharge through Outfall 111, but oily wastewater from the 84-inch hot strip mill is treated at the oily waste treatment plant prior to discharge through Outfall 211. Therefore, in the renewal permit, oil & grease and TSS will be monitored at Outfalls 111 and 211 and always combined and limited at new Outfall 411.

New or Increased Permit Limit?

(a) For those parameters that are limited through TBELs in the current permit at Outfall 009, 010 or 011, the determination of whether there is a new or increased permit limit was made by combining the proposed limits for Outfalls 009 (or 509), 010 and 011 (or 701 and 702) and comparing them to the combined existing limits at Outfalls 009, 010 and 011. The comparison is included in this Side Table.

(b) The new combined monthly average TBEL is due to new monthly average TBELs for oil & grease at Internal Outfalls 509 and 702. Monthly average and daily maximum TBELs for oil & grease were authorized at Outfall 011 under the current permit, but only a daily maximum limit was applied. The Fact Sheet of the 1986 permit includes the calculation of monthly average and daily maximum TBELs for oil & grease. The TBELs were a combination of the monthly average and daily maximum mass allowed for a number of process operations with separate TBELs. Monthly average TBELs were not provided for several of the operations so only a combined daily maximum TBEL was applied at Outfall 011. A portion of the calculated daily maximum TBEL for Outfall 011 was bubbled to Internal Outfalls 111 and 211. For those operations with monthly average and daily maximum TBELs for oil & grease, the monthly average was approximately one-third of the daily maximum. Through application of BPJ, IDEM has determined that for the process operations included under Outfall 011 in the 1986 permit that did not have monthly average TBELs, the monthly average mass limits that were authorized, but not applied, should be calculated using one-third of the daily maximum TBEL. Since a portion of the daily maximum TBELs was bubbled resulting in lower limits at Outfall 011 than calculated based on the process operations, the monthly average limit that was authorized, but not applied at Outfall 011 was determined to be 500 lbs/day and was calculated as one-third of the existing daily maximum limit of 1,500 lbs/day. The new combined monthly average TBEL does not allow an increase above what was authorized, but not applied in the current permit.

Significant Lowering of Water Quality?

(1) The new limits for mercury are based on a reasonable potential analysis using effluent monitoring data. The new limits fall under the antidegradation exemption in 327 IAC 5-2-11.3(b)(1)(C)(ii) so they do not cause a significant lowering of water quality and antidegradation under 327 IAC 5-2-11.3(b) is satisfied. This exemption also applies to 327 IAC 5-2-11.7(a)(2) so the new limits do not cause a significant lowering of water quality in the OSRW.

(2) The current permit has a concentration limit for this parameter that is less stringent than a WQBEL in the proposed permit. The existing effluent flow was used to calculate the WQBELs for the proposed permit so the new limit will not result in a calculated concentration increase outside of the mixing zone under 327 IAC 5-2-11.3(b)(1)(B)(i) and antidegradation under 327 IAC 5-2-11.3(b) is satisfied. Since the new limit does not cause a significant lowering under 327 IAC 5-2-11.3(b)(1)(B), it does not cause a significant lowering in the OSRW in accordance with Non-Rule Policy Document Water-002-NPD.

(3) As discussed in Footnote (b), the new monthly average mass limit for oil & grease at Internal Outfall 509 does not allow an increase above what was authorized, but not applied in the current permit. The monthly average TBEL does not result in a monthly average oil & grease concentration of greater than 10 mg/l at final Outfall 009 to meet the narrative criterion. This will ensure that the new limit does not result in a lowering of water quality for oil & grease in the Indiana Harbor Canal and antidegradation under 327 IAC 5-2-11.3(a) is satisfied. The new TBEL is a new application of Federal Effluent Limitations Guidelines and falls under the antidegradation exemption in 327 IAC 5-2-11.3(b)(1)(C)(ii)(DD). This exemption applies to 327 IAC 5-2-11.7(a)(2) so the new limit does not cause a significant lowering of water quality in the OSRW.

(4) A new concentration TBEL for 2,3,7,8-TCDF is required due to the addition of a TBEL for this parameter in the 2002 revision of the Effluent Limitations Guidelines for the Iron and Steel Manufacturing Point Source Category. Therefore, a TBEL for this pollutant was not applicable when the 1986 permit was issued. The production related to sintering listed in the Fact Sheet of the 1986 permit is 3,829 tons/day whereas the production related to sintering used to calculate TBELs in the permit renewal is 3,800 tons/day. The new limit is not a result of changes in pollutant loading and, since the production has not increased, will not allow an increase in pollutant loading because the limit is set at less than the minimum level and the facility has installed treatment to meet the new TBEL. The new TBEL is a result of the application of a new Federal Effluent Limitation Guideline and falls under the antidegradation exemption in 327 IAC 5-2-11.3(b)(1)(C)(ii)(DD) so it does not cause a significant lowering of water quality and antidegradation under 327 IAC 5-2-11.3(b) is satisfied. This exemption also applies to 327 IAC 5-2-11.7(a)(2) so the new limit does not cause a significant lowering of water quality in the OSRW.

(5) The new limits for mercury are based on a reasonable potential analysis using effluent monitoring data. The new limits are not a result of changes in pollutant loading and will not allow an increase in pollutant loading since the projected effluent quality is greater than the proposed effluent limits and the existing discharge flow was used to calculate the proposed mass limits. Therefore, the new limits do not cause a lowering of water quality for mercury and antidegradation under 327 IAC 5-2-11.3(a) is satisfied. The new limits fall under the antidegradation exemption in 327 IAC 5-2-11.3(b)(1)(C)(ii). This exemption applies to 327 IAC 5-2-11.7(a)(2) so the new limits do not cause a significant lowering of water quality in the OSRW.

(6) As discussed in Footnote (b), the new monthly average mass limit for oil & grease at Internal Outfall 702 does not allow an increase above what was authorized, but not applied in the current permit. The new TBEL is a new application of Federal Effluent Limitations Guidelines and falls under the antidegradation exemption in 327 IAC 5-2-11.3(b)(1)(C)(ii)(DD). Therefore, the new limit does not cause a significant lowering of water quality and antidegradation under 327 IAC 5-2-11.3(b) is satisfied. This exemption applies to 327 IAC 5-2-11.7(a)(2) so the new limit does not cause a significant lowering of water quality in the OSRW.

(7) The new limits for this parameter are based on a reasonable potential analysis using effluent monitoring data. The new limits fall under the antidegradation exemption in 327 IAC 5-2-11.7(b)(2)(A) so they are allowed and antidegradation under 327 IAC 5-2-11.7 is satisfied.

(8) The new limits for pH fall under the antidegradation exemption in 327 IAC 5-2-11.7(b)(2)(A) so they are allowed and antidegradation under 327 IAC 5-2-11.7 is satisfied.

(9) New TBELs for naphthalene and tetrachloroethylene are being applied in the proposed permit. TBELs for these parameters were authorized under the current permit, but were not applied. Based on the production numbers in the Fact Sheet of the 1986 permit, the daily maximum TBELs would have been 2.12 lbs/day for naphthalene and 3.18 lbs/day for tetrachloroethylene, so the new limits do not allow an increase above what was authorized, but not applied in the current permit. The new TBELs fall under the antidegradation exemption in 327 IAC 5-2-11.7(b)(2)(D) so they are allowed and antidegradation under 327 IAC 5-2-11.7 is satisfied.

(10) A new monthly average TBEL for oil & grease is being applied in the proposed permit at Internal Outfall 411 which is a mathematical combination of the discharges from Internal Outfalls 111 and 211. Monthly average and daily maximum TBELs for oil & grease were authorized for the combination of Internal Outfalls 111 and 211 under the current permit, but only a daily maximum limit was applied. The Fact Sheet of the 1986 permit includes the calculation of monthly average and daily maximum TBELs for oil & grease. The TBELs were a combination of the monthly average and daily maximum mass allowed for several process operations with separate TBELs. Monthly average TBELs were not provided for the Hot Strip Mill under 40 CFR 420.72(c)(1). A portion of the calculated daily maximum TBELs for other process operations at the facility were also bubbled to Internal Outfalls 111 and 211. Through application of BPJ, IDEM has calculated monthly average mass limits for the 84-inch Hot Strip Mill at one-third of the daily maximum for the permit renewal. In the Fact Sheet of the 1986 permit, the combined monthly average allowance for the process operations contributing to Internal Outfalls 111 and 211 that had monthly average TBELs was 321.31 lbs/day and the daily maximum TBEL for the Hot Strip Mill was 3142.2 lbs/day. The amount of daily maximum mass that was bubbled to Internal Outfalls 111 and 211 was 1154 lbs/day. The monthly average mass for the Hot Strip Mill calculated as one-third of the daily maximum is 1047.4 lbs/day. The monthly average mass bubbled calculated through BPJ as one-third of the daily maximum is 385 lbs/day. The monthly average oil & grease limit for Internal Outfalls 111 and 211 that was authorized, but not applied in the 1986 permit is 1754 lbs/day. Therefore, the new monthly average limit does not allow an increase above what was authorized, but not applied in the current permit. The new TBEL is a new application of Federal Effluent Limitations Guidelines and falls under the antidegradation exemption in 327 IAC 5-2-11.7(b)(2)(D) so it is allowed and antidegradation under 327 IAC 5-2-11.7 is satisfied.

Attachment B

Non-Objection Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 9 2011

WN-16J

REPLY TO THE ATTENTION OF:

Bruno Pigott, Assistant Commissioner
Office of Water Quality
Indiana Department of Environmental Management
100 North Senate Avenue
Indianapolis, Indiana 46204

Re: ArcelorMittal – Indiana Harbor West
East Chicago, Indiana
NPDES Permit No: IN0000205

Dear Mr. Pigott:

The U.S. Environmental Protection Agency has reviewed the draft National Pollutant Discharge Elimination System (NPDES) permit and fact sheet for the ArcelorMittal – Indiana Harbor West facility. The draft permit has been discussed with your staff and we have not identified any issues that would cause the Agency to object to issuance of the permit as drafted. We also concur with your tentative decision to grant the renewal of the Clean Water Act Section 301(g) variance for Ammonia as N and Phenols in the wastewater discharges from the facility. Should meaningful changes occur after the public comment period, the U.S. Environmental Protection Agency reserves the right to object to the proposed permit.

Indiana DEM must resubmit the draft permit to EPA for review if:

a. Prior to the actual date of issuance, an effluent guideline or standard is promulgated which is applicable to the permit and would require revision or modification of a limitation or condition found in the draft permit.

b. A variance is granted and permit conditions are modified to incorporate the variance.

c. There are additional revisions to be incorporated into the final permit which have not been reviewed by this Agency.

When the final permit is issued, please forward one copy and significant comments received during the public comment period to this office at the above address, attention NPDES Programs Branch.

Sincerely,

Kevin M. Pierard, Chief
NPDES Programs Branch

cc: Richard Hamblin, IDEM

Attachment C

ArcelorMittal Comment Attachments
IHC-1 Data, IHC-2 Data, 1997/1998 In-Stream Temperature Monitoring Studies, IDEM Fixed Station Monitoring Data for Cyanide, and Open Waters of Lake Michigan Map

ATTACHMENT IHC-1
Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data

IHC-2 Dickey Road

Copper

Date	Copper (Dissolved) (ug/L)	Copper (Dissolved) for DMT (ug/L)	Copper (Total) (ug/L)	Dissolved Fraction
1/8/2004	1.19	1.19	3.44	0.35
2/18/2004	1.3	1.3	2.39	0.54
3/30/2004	< 1	1	3.72	0.27
4/21/2004	1.24	1.24	3.45	0.36
5/26/2004	1.21	1.21	2.62	0.46
6/16/2004	1.13	1.13	2.42	0.47
7/19/2004	1.37	1.37	2.34	0.59
8/16/2004	1.25	1.25	2.59	0.48
9/20/2004	1.41	1.41	2.81	0.50
10/25/2004	1.29 (fDJ)		2.45	
11/29/2004	1.04	1.04	2.54	0.41
12/20/2004	1.09	1.09	2.46	0.44
1/12/2005	1.1	1.1	2.74	0.40
2/23/2005	1.03	1.03	2.14	0.48
3/21/2005	1.12	1.12	2.43	0.46
4/27/2005	1.19	1.19	2.63	0.45
6/27/2005	1.1	1.1	1.91	0.58
7/27/2005	1.04	1.04	2.16	0.48
8/22/2005	1.23	1.23	2.5	0.49
9/28/2005	1.19	1.19	2.34	0.51
10/26/2005	1.15	1.15	2.42	0.48
11/28/2005	< 1	1	2.7	0.37
12/14/2005	< 1	1	4.28	0.23
1/12/2006	1.08	1.08	3.11	0.35
2/6/2006	1.21	1.21	2.63	0.46
3/15/2006	1.38	1.38	2.8	0.49
4/26/2006	1.52	1.52	2.83	0.54
5/22/2006	1.53	1.53	3.34	0.46
6/21/2006	1.67	1.67	2.67	0.63
7/11/2006	1.62	1.62	2.51	0.65
8/14/2006	1.58	1.58	3.54	0.45
9/25/2006	1.59	1.59	3.3	0.48
10/18/2006			3	
11/27/2006			2.61	
12/18/2006			2.55	
1/22/2007			2.73	
2/19/2007			2.66	
3/28/2007			3.73	
4/25/2007			5.04	
5/30/2007			2.61	
6/20/2007			3.26	
7/30/2007			2.16	
8/27/2007	1.99	1.99	2.68	0.74
9/24/2007	1.57	1.57	2.51	0.63
10/29/2007	1.48	1.48	4.52	0.33
11/19/2007	1.59	1.59	4.33	0.37
12/17/2007	1.34	1.34	2.52	0.53
1/9/2008	1.54	1.54	3.43	0.45

Lead

Date	Lead (Dissolved) (ug/L)	Lead (Dissolved) for DMT (ug/L)	Lead (Total) (ug/L)	Dissolved Fraction
1/8/2004	< 1	1	8.47	0.118
2/18/2004	< 1	1	3.06	0.327
3/30/2004	< 1	1	7.65	0.131
4/21/2004	< 1	1	7.97	0.125
5/26/2004	< 1	1	4.77	0.210
6/16/2004	< 1	1	4.95	0.202
7/19/2004	< 1	1	3.25	0.308
8/16/2004	< 1	1	4.77	0.210
9/20/2004	< 1	1	4.85	0.206
10/25/2004	< 1	1	3.26	0.307
11/29/2004	< 1	1	3.71	0.270
12/20/2004	< 1	1	3.11	0.322
1/12/2005	< 1	1	3.57	0.280
2/23/2005	< 1	1	2.42	0.413
3/21/2005	< 1	1	3.09	0.324
4/27/2005	< 1	1	5.12	0.195
6/27/2005	< 1	1	3.51	0.285
7/27/2005	< 1	1	4.06	0.246
8/22/2005	< 1	1	4.87	0.205
9/28/2005	< 1	1	7	0.143
10/26/2005	< 1	1	3.19	0.313
11/28/2005	< 1	1	3.8	0.263
12/14/2005	< 1	1	9.88	0.101
1/12/2006	< 1	1	5.86	0.171
2/6/2006	< 1	1	2.73	0.366
3/15/2006	< 1	1	4.26	0.235
4/26/2006	< 1	1	4.78	0.209
5/22/2006	< 1	1	5.19	0.193
6/21/2006	1.06	1.06	4.2	0.252
7/11/2006	< 1	1	2.86	0.350
8/14/2006	< 1	1	5.93	0.169
9/25/2006	< 1	1	5.7	0.175
10/18/2006			3.11	
11/27/2006			2.82	
12/18/2006			2.94	
1/22/2007			2.91	
2/19/2007			2.72	
3/28/2007			6.26	
4/25/2007			7.89	
5/30/2007			3.35	
6/20/2007			4.59	
7/30/2007			1.66	
8/27/2007	< 1	1	2.08	0.481
9/24/2007	< 1	1	3.24	0.309
10/29/2007	< 1	1	7.86	0.127
11/19/2007	< 1	1	7.7	0.130
12/17/2007	< 1	1	2.35	0.426
1/9/2008	< 1	1	4.53	0.221

Zinc

Date	Zinc (Dissolved) (ug/L)	Zinc (Dissolved) for DMT (ug/L)	Zinc (Total) (ug/L)	Dissolved Fraction
1/8/2004	8.1	8.1	43.7	0.185
2/18/2004	8.67	8.67	21	0.413
3/30/2004	9.42	9.42	37.6	0.251
4/21/2004	11.2	11.2	37.4	0.299
5/26/2004	13.6	13.6	29.1	0.467
6/16/2004	4.13	4.13	24.6	0.168
7/19/2004	7.66	7.66	17.8	0.430
8/16/2004	5.94	5.94	24.7	0.240
9/20/2004				
10/25/2004	6.95	6.95	18.4	0.378
11/29/2004	15.4	15.4	31.6	0.487
12/20/2004	8.93	8.93	25.5	0.350
1/12/2005	13.1	13.1	31.8	0.412
2/23/2005	10.2	10.2	20.9	0.488
3/21/2005	9.6	9.6	22.4	0.429
4/27/2005	7.86	7.86	44.4	0.177
6/27/2005	9.62	9.62	19.1	0.504
7/27/2005	9	9	18.4	0.489
8/22/2005	8.87	8.87	23.4	0.379
9/28/2005	9.65	9.65	21.6	0.447
10/26/2005	14.2	14.2	25.5	0.557
11/28/2005	11.5	11.5	25.2	0.456
12/14/2005	11.8	11.8	50.1	0.236
1/12/2006	11.4	11.4	35.5	0.321
2/6/2006	11.1	11.1	22.7	0.489
3/15/2006	13.5	13.5	30.9	0.437
4/26/2006	10.1	10.1	27.4	0.369
5/22/2006	11.9	11.9	28.6	0.416
6/21/2006	9.96	9.96	22.2	0.449
7/11/2006	7.34	7.34	20.6	0.356
8/14/2006	9.02	9.02	29.3	0.308
9/25/2006	10.5	10.5	29	0.362
10/18/2006			23.1	
11/27/2006			21.5	
12/18/2006			25.8	
1/22/2007			23.7	
2/19/2007			24.2	
3/28/2007			33.2	
4/25/2007			42.2	
5/30/2007			18.1	
6/20/2007			23.6	
7/30/2007			13.8	
8/27/2007	10.9	10.9	16.9	0.645
9/24/2007	9.38	9.38	18.2	0.515
10/29/2007	11.9	11.9	37.2	0.320
11/19/2007	9.24	9.24	38.9	0.238
12/17/2007	14.5	14.5	22.5	0.644
1/9/2008	17.5	17.5	35.4	0.494

Copper (January 2004 to January 2008)

No. of Samples	37
Geometric mean of dissolved fractions	0.457
95th percentile of dissolved fractions	0.629

Lead (January 2004 to January 2008)

No. of Samples	38
Geometric mean of dissolved fractions	0.228
95th percentile of dissolved fractions	0.415

Zinc (January 2004 to January 2008)

No. of Samples	37
Geometric mean of dissolved fractions	0.375
95th percentile of dissolved fractions	0.574

ATTACHMENT IHC-1
Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data

IHC-3S Columubus Drive Fixed Station Monitoring Data (Station IHC-3S)

Copper					Lead					Zinc				
Date	Copper (Dissolved) (ug/L)	Copper (Dissolved) for DMT (ug/L)	Copper (Total) (ug/L)	Dissolved Fraction	Date	Lead (Dissolved) (ug/L)	Lead (Dissolved) for DMT (ug/L)	Lead (Total) (ug/L)	Dissolved Fraction	Date	Zinc (Dissolved) (ug/L)	Zinc (Dissolved) for DMT (ug/L)	Zinc (Total) (ug/L)	Dissolved Fraction
1/7/2004	1.19	1.19	4.3	0.277	1/7/2004	< 1	1	10.9	0.092	1/7/2004	7.06	7.06	47.2	0.150
2/18/2004	1.13	1.13	4.26	0.265	2/18/2004	< 1	1	11	0.091	2/18/2004	7.45	7.45	45.1	0.165
3/30/2004	1.03	1.03	3.56	0.289	3/30/2004	< 1	1	9.46	0.106	3/30/2004	10.3	10.3	45	0.229
4/21/2004	1.36	1.36	4.99	0.273	4/21/2004	< 1	1	13.5	0.074	4/21/2004	12.7	12.7	57.8	0.220
5/26/2004	1.28	1.28	3.12	0.410	5/26/2004	< 1	1	6.43	0.156	5/26/2004	14.1	14.1	36.2	0.390
6/16/2004	1.17	1.17	2.54	0.461	6/16/2004	< 1	1	5.96	0.168	6/16/2004	5.81	5.81	34.7	0.167
7/19/2004	1.23	1.23	1.55	0.794	7/19/2004	< 1	1	1.49	0.671	7/19/2004	8.86	8.86	12.1	0.732
8/16/2004	1.26	1.26	2.33	0.541	8/16/2004	< 1	1	3.88	0.258	8/16/2004	4.96	4.96	22.2	0.223
9/20/2004	1.33	1.33	2.62	0.508	9/20/2004	< 1	1	4.23	0.236	9/20/2004			17.8	
10/25/2004	1.87 (fDJ)		3.1		10/25/2004	< 1	1	6.04	0.166	10/25/2004	4.78	4.78	27.1	0.176
11/29/2004	1.08	1.08	2.69	0.401	11/29/2004	< 1	1	3.99	0.251	11/29/2004	12.6	12.6	26.6	0.474
12/20/2004	< 1	1	6.52	0.153	12/20/2004	< 1	1	15.2	0.066	12/20/2004	8.85	8.85	69.1	0.128
1/12/2005	1.1	1.1	5.64	0.195	1/12/2005	< 1	1	9.98	0.100	1/12/2005	18.9	18.9	55.3	0.342
2/23/2005	1.21	1.21	2.54	0.476	2/23/2005	< 1	1	2.37	0.422	2/23/2005	12.7	12.7	21.6	0.588
3/22/2005	1.07	1.07	3.21	0.333	3/22/2005	< 1	1	5.24	0.191	3/22/2005	9.15	9.15	29.5	0.310
4/27/2005	1.23	1.23	3.66	0.336	4/27/2005	< 1	1	7.06	0.142	4/27/2005	10.5	10.5	39.9	0.263
5/24/2005	1.17	1.17	3.33	0.351	5/24/2005	< 1	1	6.57	0.152	5/24/2005	8.98	8.98	33.9	0.266
6/27/2005	< 1	1	1.63	0.613	6/27/2005	< 1	1	2.76	0.362	6/27/2005	9.36	9.36	16.7	0.560
7/27/2005	1.06	1.06	1.85	0.573	7/27/2005	< 1	1	2.98	0.336	7/27/2005	11.2	11.2	17.9	0.626
8/22/2005	1.22	1.22	2.04	0.598	8/22/2005	< 1	1	2.15	0.465	8/22/2005	8.33	8.33	12.4	0.672
9/26/2005	1.55	1.55	2.41	0.643	9/26/2005	< 1	1	2.68	0.373	9/26/2005	8.38	8.38	15.2	0.551
10/26/2005	1.28	1.28	2.68	0.478	10/26/2005	< 1	1	3.07	0.326	10/26/2005	11.4	11.4	19.9	0.573
11/28/2005	< 1	1	24.2	0.041	11/28/2005	< 1	1	58.3	0.017	11/28/2005	11	11	193	0.057
12/15/2005	< 1	1	2.33	0.429	12/15/2005	< 1	1	3.66	0.273	12/15/2005	13	13	26.8	0.485
1/11/2006	1.08	1.08	4.6	0.235	1/11/2006	< 1	1	8.04	0.124	1/11/2006	12.9	12.9	43.5	0.297
2/6/2006	1.05	1.05	3.69	0.285	2/6/2006	< 1	1	5.33	0.188	2/6/2006	11.4	11.4	30.3	0.376
3/15/2006	1.55	1.55	4.88	0.318	3/15/2006	< 1	1	7.73	0.129	3/15/2006	15.7	15.7	45.8	0.343
4/26/2006	1.5	1.5	6.84	0.219	4/26/2006	< 1	1	15.3	0.065	4/26/2006	12.1	12.1	69.4	0.174
5/22/2006	1.58	1.58	3.9	0.405	5/22/2006	< 1	1	6.3	0.159	5/22/2006	11.1	11.1	29.2	0.380
6/21/2006	1.49	1.49	2.67	0.558	6/21/2006	< 1	1	3.14	0.318	6/21/2006	11	11	20.3	0.542
7/10/2006	1.65	1.65	2.22	0.743	7/10/2006	< 1	1	1.96	0.510	7/10/2006	8.14	8.14	14.6	0.558
8/14/2006	1.61	1.61	2.51	0.641	8/14/2006	< 1	1	3.06	0.327	8/14/2006	7.66	7.66	15.8	0.485
9/25/2006	1.78	1.78	4.86	0.366	9/25/2006	< 1	1	8.57	0.117	9/25/2006	12.4	12.4	40.4	0.307
10/18/2006			3.76		10/18/2006			4.44		10/18/2006			28.9	
11/27/2006			3.36		11/27/2006			4.16		11/27/2006			26.4	
12/18/2006			3		12/18/2006			3.39		12/18/2006			27.6	
1/22/2007			3.23		1/22/2007			3.72		1/22/2007			25.3	
2/20/2007			3.16		2/20/2007			4.17		2/20/2007			27.5	
3/28/2007			3.59		3/28/2007			5.65		3/28/2007			33.3	
4/25/2007			9.49		4/25/2007			16.1		4/25/2007			71.3	
5/30/2007			3.24		5/30/2007			5.04		5/30/2007			25.2	

ATTACHMENT IHC-1

Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data

6/20/2007			2.52	
7/30/2007			1.91	
8/27/2007	1.92	1.92	4.3	0.447
9/24/2007	1.51	1.51	2.13	0.709
10/29/2007	1.32	1.32	3.38	0.391
11/19/2007	1.36	1.36	3.81	0.357
12/17/2007	1.25	1.25	5.56	0.224
1/9/2008	1.56	1.56	6.92	0.225
2/20/2008	1.31	1.31	3.07	0.427
3/18/2008	1.36	1.36	4.03	0.337
4/21/2008			4	
5/28/2008			2.71	
6/10/2008			2.68	
7/28/2008			1.93	
8/26/2008			2.15	
9/23/2008			4.42	
10/28/2008			3.79	
11/19/2008			6.28	
12/15/2008	1.14	1.14	5.54	0.206
1/22/2009	1.24	1.24	3.87	0.320
2/10/2009	< 1	1	5.09	0.196
3/5/2009	1.28	1.28	4.43	0.289
4/21/2009	1.49	1.49	2.61	0.571
5/18/2009	1.09	1.09	2.88	0.378
6/11/2009	1.42	1.42	3.95	0.359
7/27/2009			2.59	
8/19/2009			2.17	
9/22/2009			3.37	
10/8/2009			5.66	
11/5/2009			4.08	
12/14/2009			4.25	
1/19/2010			2.19	
2/15/2010			2.36	

6/20/2007			2.65	
7/30/2007			1.37	
8/27/2007	< 1	1	5.59	0.179
9/24/2007	< 1	1	2.21	0.452
10/29/2007	< 1	1	4.98	0.201
11/19/2007	< 1	1	5.37	0.186
12/17/2007	< 1	1	13.1	0.076
1/9/2008	< 1	1	11.3	0.088
2/20/2008	< 1	1	3.8	0.263
3/18/2008	< 1	1	6.57	0.152
4/21/2008			7.2	
5/28/2008			3.74	
6/10/2008			4.75	
7/28/2008			2	
8/26/2008			2.01	
9/23/2008			5.76	
10/28/2008			5.98	
11/19/2008			12.5	
12/15/2008	< 1	1	10.7	0.093
1/22/2009	< 1	1	6	0.167
2/10/2009	< 1	1	8.66	0.115
3/5/2009	< 1	1	5.99	0.167
4/21/2009	< 1	1	2.81	0.356
5/18/2009	< 1	1	4.81	0.208
6/11/2009	< 1	1	6.97	0.143
7/27/2009			3.03	
8/19/2009			2.25	
9/22/2009			5.23	
10/8/2009			10.6	
11/5/2009			6.66	
12/14/2009			6.4	
1/19/2010			1.77	
2/15/2010			2.33	

6/20/2007			18.6	
7/30/2007			12.1	
8/27/2007	12.7	12.7	30.9	0.411
9/24/2007	8.21	8.21	18.5	0.608
10/29/2007	10.8	10.8	24.4	0.443
11/19/2007	7.52	7.52	27.5	0.273
12/17/2007	11.1	11.1	48.9	0.227
1/9/2008	17.8	17.8	62.6	0.284
2/20/2008	15.6	15.6	31.3	0.498
3/18/2008	13	13	34.6	0.376
4/21/2008			38.9	
5/28/2008			24.1	
6/10/2008			28.5	
7/28/2008			14.6	
8/26/2008			12.4	
9/23/2008			32.4	
10/28/2008			27.3	
11/19/2008			53.4	
12/15/2008	10.1	10.1	53	0.191
1/22/2009	10.2	10.2	31.9	0.321
2/10/2009	14	14	43.5	0.322
3/5/2009	13.7	13.7	35.1	0.390
4/21/2009	15.7	15.7	26.9	0.584
5/18/2009	13.9	13.9	31.3	0.444
6/11/2009	9.5	9.5	39.1	0.267
7/27/2009			15.1	
8/19/2009			10.6	
9/22/2009			20.3	
10/8/2009			36.2	
11/5/2009			31.2	
12/14/2009			30.8	
1/19/2010			15.2	
2/15/2010			17.7	

Copper (January 2004 to June 2009)	
No. of Samples	47
Geometric mean of dissolved fractions	0.358
TSS regression DMT (TSS = 4 mg/l)	0.493
95th percentile of dissolved fractions	0.718

Lead (January 2004 to June 2009)	
No. of Samples	48
Geometric mean of dissolved fractions	0.176
TSS regression DMT (TSS = 4 mg/l)	0.268
95th percentile of dissolved fractions	0.472

Zinc (January 2004 to June 2009)	
No. of Samples	47
Geometric mean of dissolved fractions	0.332
TSS regression DMT (TSS = 4 mg/l)	0.432
95th percentile of dissolved fractions	0.635

ATTACHMENT IHC-1

Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data

IHC-0 Fixed Station Monitoring Data

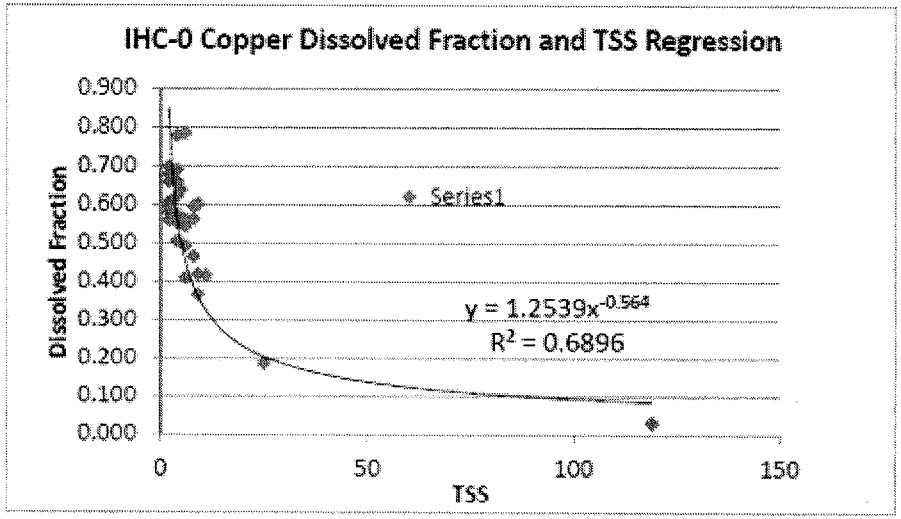
Copper					Lead					Zinc				
Date	Copper (Dissolved) (ug/L)	Copper (Dissolved) for DMT (ug/L)	Copper (Total) (ug/L)	Dissolved Fraction	Date	Lead (Dissolved) (ug/L)	Lead (Dissolved) for DMT (ug/L)	Lead (Total) (ug/L)	Dissolved Fraction	Date	Zinc (Dissolved) (ug/L)	Zinc (Dissolved) for DMT (ug/L)	Zinc (Total) (ug/L)	Dissolved Fraction
1/7/2004	1.42	1.42	2.53	0.561	1/7/2004	< 1	1	2.71	0.369	1/7/2004	11.1	11.1	24.4	0.455
2/19/2004	1.25	1.25	2.06	0.607	2/19/2004	< 1	1	1.72	0.581	2/19/2004	10.6	10.6	19.4	0.546
3/30/2004	1.14	1.14	2.78	0.410	3/30/2004	< 1	1	3.82	0.262	3/30/2004	10.1	10.1	29.9	0.338
4/21/2004	< 1	1	32.7	0.031	4/21/2004	< 1	1	83.4	0.012	4/21/2004	7.38	7.38	414	0.018
5/26/2004	1.41	1.41	2.42	0.583	5/26/2004	< 1	1	2.1	0.476	5/26/2004	13.3	13.3	24.3	0.547
6/16/2004	1.42	1.42	2.36	0.602	6/16/2004	< 1	1	3.17	0.315	6/16/2004	24	24	45.9	0.524
7/19/2004	1.65	1.65	2.5	0.660	7/19/2004	< 1	1	1.63	0.613	7/19/2004	9.9	9.9	19.2	0.516
8/16/2004	1.42	1.42	2.53	0.561	8/16/2004	< 1	1	1.85	0.541	8/16/2004	17.5	17.5	37	0.473
9/21/2004	1.47	1.47	2.65	0.555	9/21/2004	< 1	1	2.42	0.413	9/21/2004				
10/26/2004	1.34 (fDJ)		2.71		10/26/2004	< 1	1	2.79	0.358	10/26/2004	9.13	9.13	23.1	0.395
11/30/2004	1.05	1.05	1.76	0.597	11/30/2004	< 1	1	1.68	0.595	11/30/2004	13.8	13.8	21.3	0.648
12/20/2004	< 1	1	5.34	0.187	12/20/2004	< 1	1	9.59	0.104	12/20/2004	7.7	7.7	59.2	0.130
1/12/2005	1.2	1.2	2.85	0.421	1/12/2005	< 1	1	3.29	0.304	1/12/2005	10.8	10.8	32	0.338
2/24/2005	1.32	1.32	2	0.660	2/24/2005	< 1	1	1.71	0.585	2/24/2005	36.3	36.3	50.9	0.713
3/21/2005	1.48	1.48	2.72	0.544	3/21/2005	< 1	1	2.52	0.397	3/21/2005	12.6	12.6	25.9	0.486
4/27/2005	1.3	1.3	3.11	0.418	4/27/2005	< 1	1	3.66	0.273	4/27/2005	31.3	31.3	65.8	0.476
5/24/2005	1.48	1.48	2.92	0.507	5/24/2005	< 1	1	2.67	0.375	5/24/2005	47	47	74.5	0.631
6/27/2005	1.42	1.42	2.03	0.700	6/27/2005	< 1	1	1.76	0.568	6/27/2005	20.9	20.9	33	0.633
7/28/2005	1.25	1.25	2.1	0.595	7/28/2005	< 1	1	1.94	0.515	7/28/2005	14.8	14.8	24.5	0.604
8/22/2005	1.32	1.32	2.12	0.623	8/22/2005	< 1	1	1.72	0.581	8/22/2005	17	17	24.9	0.683
9/26/2005	1.09	1.09	1.89	0.577	9/26/2005	< 1	1	1.96	0.510	9/26/2005	17.3	17.3	26.4	0.655
11/28/2005	1.59	1.59	2.49	0.639	11/28/2005	< 1	1	1.58	0.633	11/28/2005	45.6	45.6	52.9	0.862
12/14/2005	1.15	1.15	3.12	0.369	12/14/2005	< 1	1	3.58	0.279	12/14/2005	10.9	10.9	25	0.436
2/6/2006	1.36	1.36	2.75	0.495	2/6/2006	< 1	1	2.35	0.426	2/6/2006	25.1	25.1	37.9	0.664
3/15/2006	1.58	1.58	2.8	0.564	3/15/2006	< 1	1	3.21	0.312	3/15/2006	24.4	24.4	35.2	0.693
4/26/2006	1.94	1.94	2.47	0.785	4/26/2006	< 1	1	2.26	0.442	4/26/2006	14.6	14.6	26.9	0.543
5/22/2006	1.59	1.59	2.64	0.602	5/22/2006	< 1	1	2.77	0.361	5/22/2006	14.4	14.4	27.4	0.526
6/21/2006	1.48	1.48	1.9	0.779	6/21/2006	< 1	1	1.85	0.541	6/21/2006	14.1	14.1	29.1	0.485
7/10/2006	1.42	1.42	3.04	0.467	7/10/2006	< 1	1	3.19	0.313	7/10/2006	14.4	14.4	38.2	0.377
8/14/2006	1.5	1.5	2.17	0.691	8/14/2006	< 1	1	1.43	0.699	8/14/2006	8.29	8.29	14.8	0.560
9/26/2006	1.48	1.48	2.18	0.679	9/26/2006	< 1	1	1.52	0.658	9/26/2006	43.9	43.9	53.3	0.824

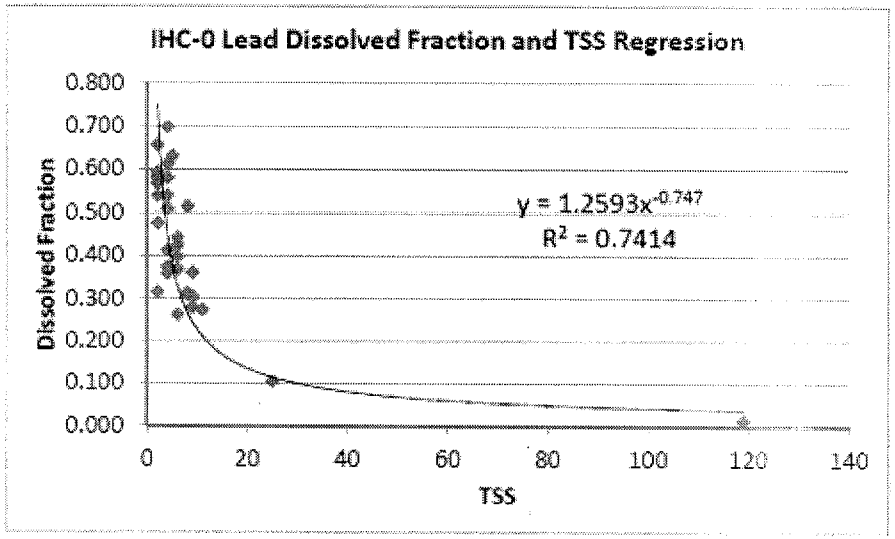
Copper (January 2004 to October 2006)	
No. of Samples	30
Geometric mean of dissolved fractions	0.499
TSS regression DMT (TSS = 4 mg/l)	0.574
95th percentile of dissolved fractions	0.743

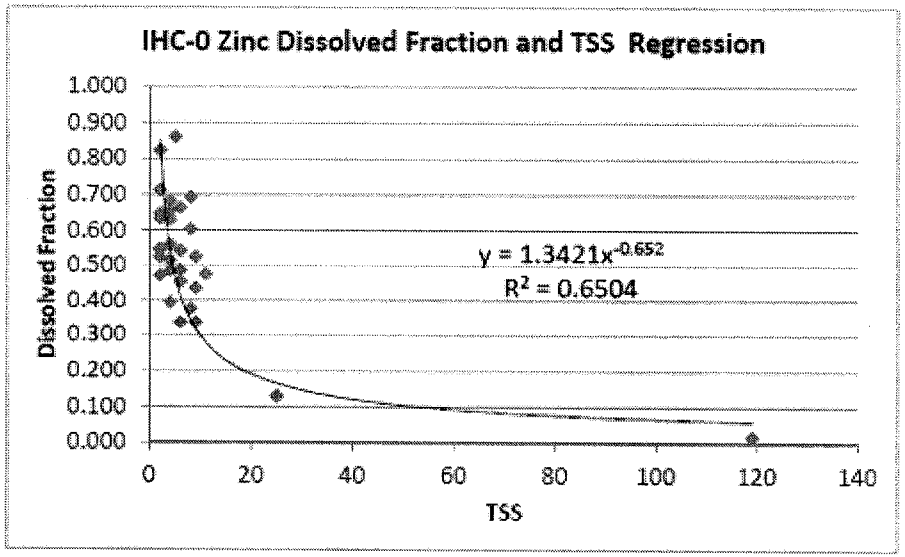
Lead (January 2004 to October 2006)	
No. of Samples	31
Geometric mean of dissolved fractions	0.374
TSS regression DMT (TSS = 4 mg/l)	0.447
95th percentile of dissolved fractions	0.645

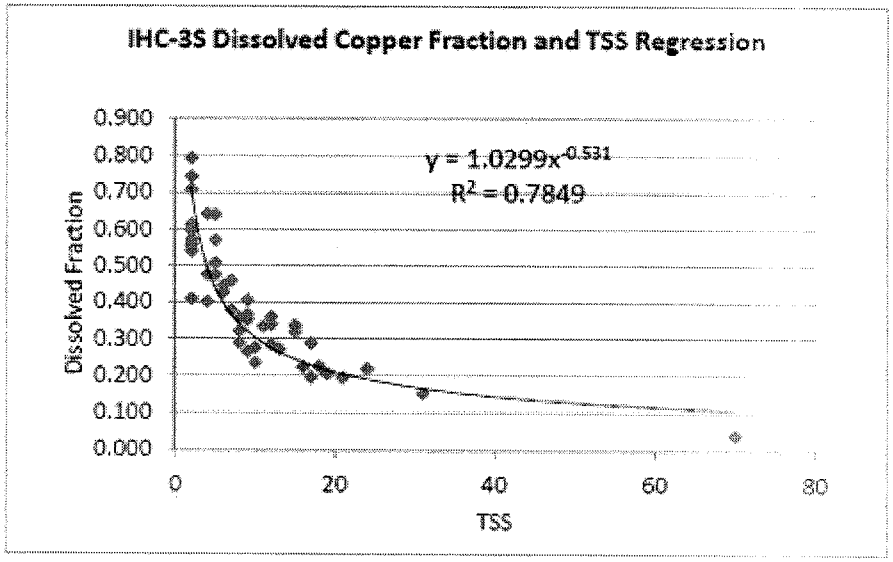
Zinc (January 2004 to October 2006)	
No. of Samples	30
Geometric mean of dissolved fractions	0.462
TSS regression DMT (TSS = 4 mg/l)	0.544
95th percentile of dissolved fractions	0.774

ATTACHMENT IHC-1
Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data



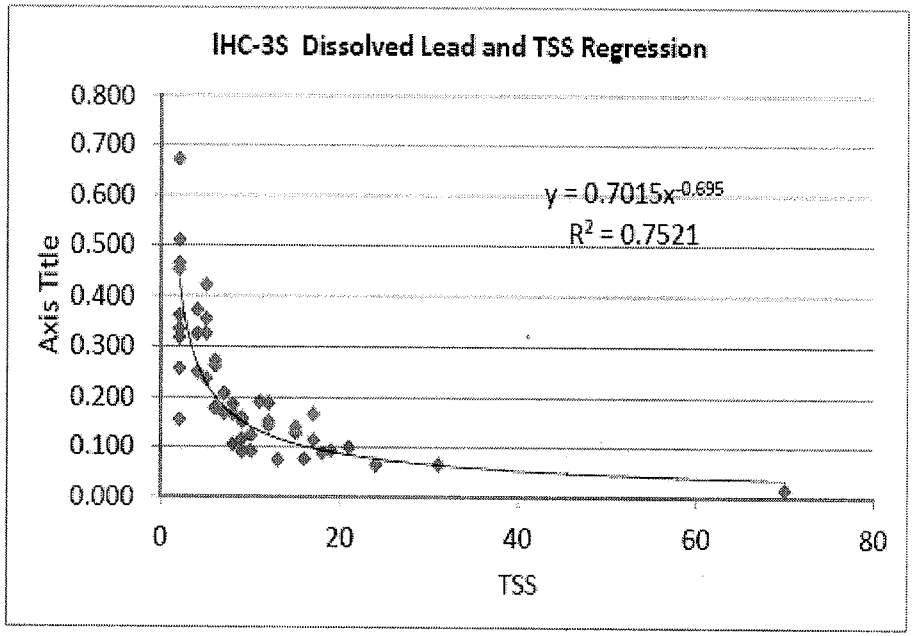


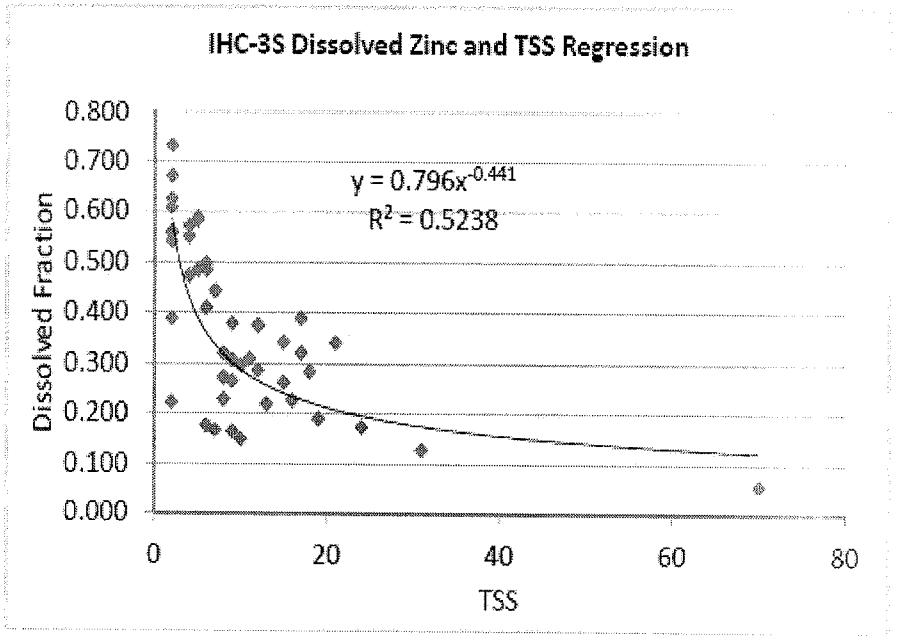




ATTACHMENT IHC-1

Calculation of Dissolved Metals Translators from IDEM fixed station monitoring data





ATTACHMENT IHC-2
MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: LEAD (TOTAL RECOVERABLE)

SECTION 1 - MODEL INPUTS									
						PRELIMINARY EFFLUENT LIMITATIONS			
						MONTHLY AVERAGE		DAILY MAXIMUM	
SEGMENT	OUTFALL	DISCHARGE FLOW (mgd)	4-DAY AVERAGE DISCHARGE CONC. (µg/L)	4-DAY AVERAGE DISCHARGE LOAD (lbs/day)	MONTHLY SAMPLING FREQUENCY	CONC. (µg/L)	LOAD (lbs/day)	CONC. (µg/L)	LOAD (lbs/day)
27	BUC001	0.55	25	0.11	4	20	0.092	41	0.19
29	AMC001	6.5	215	11.66	4	176	9.5	350	19
30	AMLC001	3.8	14	0.42	4	11	0.30	23	0.70
31	AMW002	11.2	2.0	0.19					
33	AME007	0.0037	4.0	0.00012					
34	AMW009	55.3	13	6.00	4	11	5.1	21	9.7
34	AMW010	36.6	3.0	0.92					
37	AME011	84.7	--	1.1					
37	AME014	11.5	146	14.01	4	120	11.5	240	23
37	AME018	15.9	40	5.31	4	33	4.3	66	9.0
38	AMW011	23.4	32	6.25	4	26	5.1	53	10
124	CDF001	0.33	16	0.04	4	13	0.036	26	0.072
123	EM001	0.33	16	0.04	4	13	0.036	26	0.072
37	AMW Intake	-49	(Withdrawal)						
Lake Michigan Conc. (µg/l) =		0.57	(for lake intrusion flow)						8/18/2011

ATTACHMENT IHC-2

MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: LEAD (TOTAL RECOVERABLE)

SECTION 2 - MODEL OUTPUT

SURFACE SEGMENT	DISCHARGE FLOW TO THE SEGMENT (mgd)	DISCHARGE LOAD TO THE SEGMENT (lbs/day)	25% FLOW OF PRECEDING SEGMENT (mgd)	25% LOAD OF PRECEDING SEGMENT (lbs/day)	TOTAL MIXING ZONE FLOW IN THE SEGMENT (mgd)	TOTAL MIXING ZONE LOAD IN THE SEGMENT (lbs/day)	STREAM CONCENTRATION AT EDGE OF MIXING ZONE[1] (µg/L)	FLOW OUT OF SEGMENT (mgd)	LOAD OUT OF SEGMENT (lbs/day)	CONC. OUT OF SEGMENT[1] (µg/L)
20/133								227.54	9.68	5.1
21	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
22	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
23	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
24	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
25	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
26	0	0	56.89	2.42	56.89	2.42	**5.1**	227.54	9.68	5.1
27	0.55	0.11	56.89	2.42	57.44	2.54	**5.3**	228.09	9.80	5.1
28	0	0	57.02	2.45	57.02	2.45	**5.1**	228.09	9.80	5.1
LGC	0.66	0.09	--	--	--	--	--	228.75	9.89	5.2
29	6.5	11.7	57.19	2.47	63.69	14.13	**26.6**	235.25	21.55	11.0
30	3.6	0.42	58.81	5.39	62.41	5.81	**11.2**	238.85	21.97	11.0
31	11.2	0.19	59.71	5.49	70.91	5.68	**9.6**	250.05	8.35	4.0
32	0	0	62.51	2.09	62.51	2.09	**4.0**	250.05	8.35	4.0
33	9.05	0.04	62.51	2.09	71.57	2.13	**3.6**	259.10	8.39	3.9
34	101.60	6.96	64.78	2.10	166.37	9.06	**6.5**	360.70	15.35	5.1
35	9.70	0.05	90.17	3.84	99.87	3.89	**4.7**	370.40	15.40	5.0
36	9.70	0.05	92.60	3.85	102.30	3.90	**4.6**	380.09	15.44	4.9
Intake	-49	-1.99	--	--	--	--	--	331.09	13.45	4.9
37	121.90	20.46	82.77	3.36	204.57	23.83	**14.0**	452.89	33.92	9.0
38	33.74	6.30	113.22	8.48	146.96	14.78	**12.0**	486.63	40.22	9.9
39	10.34	0.05	121.86	10.05	132.00	10.10	**9.2**	496.97	40.26	9.7
40	10.34	0.05	124.24	10.07	134.59	10.12	**9.0**	507.32	40.31	9.5
41	10.34	0.05	126.83	10.08	137.17	10.13	**8.8**	517.66	40.36	9.3

[1]Segments 21-26: Lead $C_{instream}$ (CCC/DMT) = 16 µg/L (Hardness = 208 mg/L and DMT = 0.684)

Segments 27-31: Lead $C_{instream}$ (CCC/DMT) = 26.6 µg/L (Hardness = 206 mg/L and DMT = 0.415)

Segments 32-41: Lead $C_{instream}$ (CCC/DMT) = 25.3 µg/L (Hardness = 178 mg/L and DMT = 0.374)

Lake Michigan (Out of Segment 41): Lead $C_{instream}$ (CCC/DMT) = 9.9 µg/L (Hardness = 140 mg/L and DMT = 0.742)

8/18/2011

ATTACHMENT IHC-2
MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: LEAD (TOTAL RECOVERABLE)

SECTION 3 - RATIONALE FOR MODEL INPUTS	
OUTFALL	**RATIONALE FOR WASTELOAD ALLOCATION**
BUC001	The 4-day average WLA for this outfall was set equal to 25 ug/l in the March 19, 2009 WLA (WLA001600). Only one discharge event has occured at this facility (March 11, 2010) and the lead concentration was 0.4 ug/l which is less than the estimated daily maximum PEQ of 36 ug/l in the 2009 WLA. Therefore, it was set equal to the value used in the 2009 WLA. The sampling frequency was set equal to the default of 1/week.
AMC001	Set equal to value that equates to limits based on site-specific DMT
AMLC001	Set equal to value that results in limits which are greater than PEQs calculated under 327 IAC 5-2-11.5(b)(1)(B)(V) and greater than the concentrations equivalent to Outfall 602 TBELs.
AMW002	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-3S and comparable to background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall consists of noncontact cooling water, stormwater and groundwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Indiana Harbor Canal and Lake Michigan; primarily noncontact cooling water; effluent concentration small compared to the criterion; and, no internal outfalls), downstream fixed station IHC-2 showing instream concentration less than upstream concentration at fixed station IHC-3S and the available dilution. Set equal to effluent concentration which is the same as the background concentration at fixed station IHC-0.
AME007	Only stormwater data available. Preliminary effluent limitations not developed based on source and nature of the discharge. Set equal to background concentration calculated at IDEM fixed station IHC-2.
AMW009	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-2 which is upstream of the outfall and less than background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall currently consists of noncontact cooling water, stormwater and groundwater. It is proposed to add internal Outfall 509 which will have TBELs for lead of monthly average 2.98 lbs/day and daily maximum 8.95 lbs/day and an effluent flow of 1.1 mgd. Estimated monthly average (8.4 ug/l) and daily maximum (21 ug/l) PEQs were developed based on the sum of the TBELs at internal Outfall 509 and the mass calculated using a current effluent concentration of 2 ug/l (background concentration at fixed station IHC-0) and flow of 54.2 mgd. Set so that monthly and daily PEQs do not exceed PELs. The sampling frequency was set equal to the default of 1/week.
AMW010	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-2 which is upstream of the outfall and less than background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall consists of noncontact cooling water, stormwater and groundwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Indiana Harbor Canal and Lake Michigan; primarily noncontact cooling water; effluent concentration small compared to the criterion; and, no internal outfalls), downstream fixed station IHC-0 showing instream concentration less than upstream concentration at fixed station IHC-2 and the available dilution. Set based on the effluent concentration which is the same as the background concentration at fixed station IHC-0. Also, set so that the combined mass for Outfalls 009 and 010 does not exceed the PELs in the PEL spreadsheet for the combined outfalls.
AME011	MMR data comparable to Lake Michigan data collected at IDEM fixed station LM-EC Lake Michigan at East Chicago Waterworks which is located in the vicinity of the ArcelorMittal Indiana Harbor East intakes. This outfall consists of noncontact cooling water, boiler blowdown, zeolite rinse water and stormwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Lake Michigan; primarily noncontact cooling water; effluent concentration small compared to criterion; and, no internal outfalls) and the available dilution. Set equal to the geometric mean of effluent loading data due to the availability of a large, representative effluent data set.
AME014	Set equal to value that equates to existing Outfall 014 monthly average limit and that reserves some capacity at Lake Michigan. Resulting daily max PEL is more stringent than existing daily max limit and preliminary daily max WQBEL calculated using TSS regression or geometric mean DMTs.
AME018	Set equal to value that results in PELs greater than the sum of the 518 and 618 TBELs.
AMW011	The monthly PEQ is 14 ug/l and the daily PEQ is 29 ug/l. This outfall currently has TBELs for lead, but it is proposed to move part of the source of lead and part of the TBELs to internal Outfall 509. It is also proposed to create internal Outfalls 701 and 702 that will have TBELs for lead and discharge through Outfall 011. The proposed internal Outfall 701 monthly average/daily maximum TBELs are 0.25/0.78 lbs/day. The proposed internal Outfall 702 monthly average/daily maximum TBELs are 0.72/2.17 lbs/day. Set to meet the PELs in the PEL spreadsheet. This value allows the PEQs and the proposed TBELs to be met. The sampling frequency was set equal to the default of 1/week.
CDF001	No effluent data available. Set equal to the chronic criterion based on potential future discharge. The sampling frequency was set equal to 1/week based on potential future permit limit.
EM001	Limited effluent data available from 1997 and 1998. Data from 1997 provided in April 1, 1998 WLA Report (WLA000307). Set equal to the chronic criterion based on the available data. The sampling frequency was set equal to 1/week based on potential future permit limit.

ATTACHMENT IHC-2
MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: ZINC (TOTAL RECOVERABLE)

SECTION 1 - MODEL INPUTS

SEGMENT	OUTFALL	DISCHARGE FLOW (mgd)	4-DAY AVERAGE DISCHARGE CONC. (µg/L)	4-DAY AVERAGE DISCHARGE LOAD (lbs/day)	MONTHLY SAMPLING FREQUENCY	PRELIMINARY EFFLUENT LIMITATIONS			
						MONTHLY AVERAGE		DAILY MAXIMUM	
						CONC. (µg/L)	LOAD (lbs/day)	CONC. (µg/L)	LOAD (lbs/day)
27	BUC001	0.55	29	0.13					
29	AMC001	6.5	440	23.87	4	360	20	720	39
30	AMLC001	3.6	46	1.38	4	38	1.1	80	2.4
31	AMW002	11.2	27	2.52					
33	AME007	0.0037	25	0.00077					
34	AMW009	55.3	45	20.77	4	37	17	74	34
34	AMW010	36.6	27	8.25					
37	AME011	84.7	–	7.2					
37	AME014	11.5	295	28.31	4	240	23	480	46
37	AME016	15.9	217	28.79	4	180	24	360	48
38	AMW011	23.4	214	41.79	4	180	35	350	68
124	CDF001	0.33	134	0.37	4	110	0.30	220	0.61
123	EM001	0.33	134	0.37	4	110	0.30	220	0.61
37	AMW Intake	-49	(Withdrawal)						
Lake Michigan Conc. (µg/l) =		3.5	(for lake intrusion flow)						9/18/2011

ATTACHMENT IHC-2

MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: ZINC (TOTAL RECOVERABLE)

SECTION 2 - MODEL OUTPUT

SURFACE SEGMENT	DISCHARGE FLOW TO THE SEGMENT (mgd)	DISCHARGE LOAD TO THE SEGMENT (lbs/day)	25% FLOW OF PRECEDING SEGMENT (mgd)	25% LOAD OF PRECEDING SEGMENT (lbs/day)	TOTAL MIXING ZONE FLOW IN THE SEGMENT (mgd)	TOTAL MIXING ZONE LOAD IN THE SEGMENT (lbs/day)	STREAM CONCENTRATION AT EDGE OF MIXING ZONE[1] (µg/L)	FLOW OUT OF SEGMENT (mgd)	LOAD OUT OF SEGMENT (lbs/day)	CONC. OUT OF SEGMENT[1] (µg/L)
20/133								227.54	55.07	29
21	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
22	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
23	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
24	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
25	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
26	0	0	56.89	13.77	56.89	13.77	29	227.54	55.07	29
27	0.55	0.13	56.89	13.77	57.44	13.90	29	228.09	55.20	29
28	0	0	57.02	13.80	57.02	13.80	29	228.09	55.20	29
LGC	0.66	0.74	--	--	--	--	--	228.75	55.94	29
29	6.5	23.9	57.19	13.98	63.69	37.85	71	235.25	79.80	41
30	3.6	1.38	58.81	19.85	62.41	21.33	41	238.85	81.19	41
31	11.2	2.52	59.71	20.30	70.91	22.82	39	250.05	82.17	25
32	0	0	62.51	13.04	62.51	13.04	25	250.05	82.17	25
33	9.05	0.27	62.51	13.04	71.57	13.31	22	259.10	82.43	24
34	101.60	29.30	64.78	13.11	166.37	42.40	31	360.70	81.73	27
35	9.70	0.28	90.17	20.43	99.87	20.72	25	370.40	82.01	27
36	9.70	0.28	92.60	20.50	102.30	20.79	24	380.09	82.29	26
Intake	-49	-10.61	--	--	--	--	--	331.09	71.69	26
37	121.80	64.59	82.77	17.92	204.57	82.51	48	452.89	136.27	36
38	33.74	42.09	113.22	34.07	146.96	76.16	62	486.63	178.36	44
39	10.34	0.30	121.66	44.59	132.00	44.89	41	496.97	178.66	43
40	10.34	0.30	124.24	44.67	134.59	44.97	40	507.32	178.97	42
41	10.34	0.30	126.83	44.74	137.17	45.04	39	517.66	179.27	41

[1]Segments 21-26: Zinc $C_{instream}$ (CCC/DMT) = 220 µg/L (Hardness = 208 mg/L and DMT = 0.986)

Segments 27-31: Zinc $C_{instream}$ (CCC/DMT) = 582 µg/L (Hardness = 206 mg/L and DMT = 0.375)

Segments 32-41: Zinc $C_{instream}$ (CCC/DMT) = 417 µg/L (Hardness = 178 mg/L and DMT = 0.462)

Lake Michigan (Out of Segment 41): Zinc $C_{instream}$ (CCC/DMT) = 160 µg/L (Hardness = 140 mg/L and DMT = 0.986)

8/18/2011

ATTACHMENT IHC-2

MODIFIED INDIANA HARBOR CANAL WASTELOAD ALLOCATION - MODIFICATIONS HIGHLIGHTED

PARAMETER: ZINC (TOTAL RECOVERABLE)

SECTION 3 - RATIONALE FOR MODEL INPUTS	
OUTFALL	**RATIONALE FOR WASTELOAD ALLOCATION**
BUC001	No effluent data available. Set equal to the background concentration calculated at fixed station IHC-3S based on industrial user (to East Chicago WWTP) data submitted with January 2008 permit application. Preliminary effluent limitations not developed based on source and nature of the discharge.
AMC001	WLA value equates to limits calculated with site-specific DMT
AMLC001	Set equal to value that results in limits which are greater than PEQs calculated under 327 IAC 5-2-11.5(b)(1)(B)(V) and greater than the concentrations equivalent to Outfall 802 TBELs.
AMW002	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-3S and less than background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall consists of noncontact cooling water, stormwater and groundwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Indiana Harbor Canal and Lake Michigan; primarily noncontact cooling water; effluent concentration small compared to criterion; and, no internal outfalls), downstream fixed station IHC-2 showing instream concentration less than upstream concentration at fixed station IHC-3S and the available dilution. Set equal to background concentration at fixed station IHC-0.
AME007	Only stormwater data available. Set equal to background concentration calculated at IDEM fixed station IHC-2. Preliminary effluent limitations not developed based on source and nature of the discharge.
AMW009	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-2 which is upstream of the outfall and less than background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall currently consists of noncontact cooling water, stormwater and groundwater. It is proposed to add internal Outfall 509 which will have TBELs for zinc of monthly average 4.46 lbs/day and daily maximum 13.41 lbs/day and an effluent flow of 1.1 mgd. Estimated monthly average (36 ug/l) and daily maximum (56 ug/l) PEQs were developed based on the sum of the TBELs at internal Outfall 509 and the mass calculated using a current effluent concentration of 27 ug/l (estimated based on available effluent data and intake source data) and flow of 54.2 mgd. Set so that monthly and daily PEQs do not exceed PELs. The sampling frequency was set equal to the default of 1/week.
AMW010	1999 TMDL data less than background concentration calculated at IDEM fixed station IHC-2 which is upstream of the outfall and less than background concentration at IHC-0 which is the fixed station most representative of the intake source. This outfall consists of noncontact cooling water, stormwater and groundwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Indiana Harbor Canal and Lake Michigan; effluent concentration small compared to the criterion; and, no internal outfalls), and the available dilution. Set based on available effluent data and intake source data. Also, set so that the combined mass for Outfalls 009 and 010 does not exceed the PELs in the PEL spreadsheet for the combined outfalls.
AME011	MMR data elevated above Lake Michigan data collected at IDEM fixed station LM-EC Lake Michigan at East Chicago Waterworks which is located in the vicinity of the ArcelorMittal Indiana Harbor East intakes. However, it is less than upstream data collected at IDEM fixed station IHC-2. This outfall consists of noncontact cooling water, boiler blowdown, zeolite rinse water and stormwater. Preliminary effluent limitations not developed based on source and nature of discharge (intake from Lake Michigan; primarily noncontact cooling water; effluent concentration less than background concentration; effluent concentration small compared to criterion; and, no internal outfalls) and the available dilution. Set equal to the geometric mean of effluent loading data due to the availability of a large, representative effluent data set.
AME014	WLA value equates to limits calculated with site-specific DMT
AME018	The monthly PEQ is 260 ug/l and the daily PEQ is 1700 ug/l. The internal Outfall 518 current monthly average/daily maximum TBELs are 2.73/8.21 lbs/day and the new calculated TBELs are 3.25/9.79 lbs/day. The internal Outfall 618 current monthly average/daily maximum TBELs are 3.50/10.50 lbs/day and the new calculated TBELs are 5.55/16.63 lbs/day. Set to meet the PELs in the PEL spreadsheet to allow the maximum possible limits due to the high PEQs and internal mass limits. This value does not allow the PEQs to be me, but it does allow the current TBELs to be met. The sampling frequency was set equal to the default of 1/week.
AMW011	The monthly PEQ is 260 ug/l and the daily PEQ is 590 ug/l. This outfall currently has TBELs for zinc, but it is proposed to move part of the source of zinc and part of the TBELs to internal Outfall 509. It is also proposed to create internal Outfalls 701 and 702 that will have TBELs for zinc and discharge through Outfall 011. The proposed internal Outfall 701 monthly average/daily maximum TBELs are 0.38/1.15 lbs/day. The proposed internal Outfall 702 monthly average/daily maximum TBELs are 1.03/3.26 lbs/day. Set to meet the PELs in the PEL spreadsheet to allow the maximum possible limits due to the high PEQs. This value does not allow the PEQs to be me, but it does allow the proposed TBELs to be met. The sampling frequency was set equal to the default of 1/week.
CDF001	No effluent data available. Set based on the PELs in the PEL spreadsheet due to potential future discharge. The PELs in the PEL spreadsheet are based on the acute (1-hour average) WLA. The 4-day average WLA was set equal to the concentration that would allow the PELs in the PEL spreadsheet to be met. The sampling frequency was set equal to 1/week based on potential future permit limit.
EM001	Historical monitoring data are available and indicate the presence of zinc. Set based on the PELs in the PEL spreadsheet due to available monitoring data. The PELs in the PEL spreadsheet are based on the acute (1-hour average) WLA. The 4-day average WLA was set equal to the concentration that would allow the PELs in the PEL spreadsheet to be met. The sampling frequency was set equal to 1/week based on potential future permit limit.

Indiana Harbor and Indiana Harbor Ship Canal
1997, 1998 In-stream Temperature Monitoring Studies
(Data Previously Submitted to IDEM by Inland Steel and Ispat-Inland)

Introduction

The Indiana Department of Environmental Management (IDEM) has requested that ArcelorMittal provide information regarding thermal discharges from the Indiana Harbor West facility. We understand the purpose of the data request is to assess compliance with Indiana water quality standards for temperature in the Indiana Harbor Ship Canal and Indiana Harbor. The current NPDES permit for Indiana Harbor West does not contain monitoring requirements that would generate the necessary data to calculate historic thermal discharge loadings. Intake and effluent temperature monitoring under current relatively low production rates at Indiana Harbor West would not yield useful data in that regard.

To address the question of compliance with Indiana water quality standards for temperature in the Indiana Harbor Ship Canal and Indiana Harbor, ArcelorMittal requests that IDEM evaluate ambient temperature monitoring data collected by Inland Steel during 1997 and Ispat-Inland in 1998. These studies were conducted pursuant to Inland Steel's (now Indiana Harbor East) NPDES permit. The scope of the studies included ambient temperature measurements at key locations in the Indiana Harbor Ship Canal and Indiana Harbor from April to November of each year. Measurements were made approximately once per week during the summer months and less frequent in the spring and fall. Instream temperature measurements were made near the water surface, at mid-depth and near the bottom of the Canal and Harbor. The study results show compliance with applicable Indiana water quality standards during a period of relatively high production and relatively high thermal loads.

At the time these studies were conducted both LTV Steel (Indiana Harbor West) and Inland and Ispat-Inland (Indiana Harbor East) were operating at reasonably high production rates as measured by raw steel production. Ambient air temperatures were within normal ranges and there have been no significant changes in the flow regimes in the Indiana Harbor Ship Canal between then and now. Consequently, the results of those studies can be used to assess compliance with applicable Indiana water quality standards for temperature under current discharge and production conditions and under prospective future high production conditions.

Results of 1997 and 1998 Temperature Monitoring Studies

In 1997 and 1998, in-stream temperature was measured from April through November of each year at two locations in the Indiana Harbor Ship Canal and at one location in Indiana Harbor. Temperature in the Indiana Harbor Ship Canal was measured in the center of the canal at the now Indiana Harbor Long Carbon Outfall 001, and at the center of the canal between now Indiana Harbor East Outfalls 008 and 011. Temperature in Indiana Harbor was measured in the center of the Harbor, between now Indiana Harbor East Outfalls 011, 014, and 018. At each location, temperature was measured one-foot below the water surface, at mid-depth, and one-foot above the bottom. This temperature measuring protocol is consistent with ambient temperature monitoring protocols established at 327 IAC 2-1.5-8(6)(c)(4)(D)(i).

The final two monitoring events conducted on October 26 and November 24, 1998 included temperature measurements at additional locations across the Canal at Outfall 001 and between Outfalls 008 and 011. At each location, temperatures were monitored near the east bank and the west bank in addition to the center of the canal. Aerial maps of all monitoring locations are included as Exhibit A.

Exhibit B presents the in-stream temperature monitoring data. For each monitoring event, the maximum recorded temperature was compared to the Indiana maximum water quality standards for Indiana streams within the Great Lakes basin (327 IAC 2-1.5-8(6)(c)(4)(C)). Both the Indiana Harbor Ship Canal and Indiana Harbor are streams within the Great Lakes basin and are not within the open waters of Lake Michigan (327 IAC 2-15-2(64)).

The in-stream temperature monitoring data show maximum temperature water quality standards were met at all locations monitored in 1997 and 1998. The results are shown graphically in Figures 1 and 2.

Historical Ambient Air Temperature Data Analysis

Monthly average ambient air temperatures for 1997 and 1998 were compared to historic monthly average ambient air temperatures from 1970 to 2009 to determine whether air temperatures observed in 1997 and 1998 were typical of air temperatures historically measured and thus consistent with typical conditions. A summary of the summer monthly average data is presented below (all temperatures in Deg. F):

	July	August	September
1997	74.2	71.8	70.3
1998	74.3	74.5	73.2
1970-2009 Avg.	72.4	72.7	70.3
1970-2009 Max.	77.1	76.9	74.1

These data show ambient air temperatures in 1997 and 1998 were typical of historic conditions and suggest in-stream temperatures for 1997 and 1998 are representative of thermal discharges at the time and typical summer air temperatures. Monthly average data for January through December are included as Exhibit C and are shown graphically in Figure 3.

1997 and 1998 Steel Production at LTV Steel and Inland Steel, Ispat-Inland

Presented below is comparison of raw steel production for 1997 and 1998 and current steelmaking capacity (2010 joint capacity of Indiana Harbor East and West). Raw steel production is a good indicator of overall mill activity and thermal discharges. The 1997 and 1998, raw steel production was calculated as the sum of annual raw steel tonnages from the two basic oxygen furnace) BOF shops and the one electric arc furnace (EAF) shop at Inland Steel and Ispat-Inland, and the single BOF shop at LTV Steel.

1997 Production	9,816,000 tons 98.2 % of 2010 Nominal Capacity
1998 Production	9,282,000 tons 92.8 % of 2010 Nominal Capacity
2010 Nominal Capacity	10,000,000 tons (estimated)

Raw steel production during each year was in the immediate range of the current nominal steel capacity at Indiana Harbor. Furthermore, the following thermal load sources that were operating at Inland Steel or Ispat-Inland in 1997 and 1998 are no longer operating:

- No. 4 AC Power Station (Outfall 018)
- No. 2A Blooming Mill/21" Bar Mill (Outfall 014)
- Plant 1 Galvanizing Line (Outfall 014)

Thus, today's thermal loading at comparable steel production rates are expected to be less than observed in 1997 and 1998. Consequently, thermal discharges and impacts on ambient water temperatures in the Indiana Harbor Ship Canal and Indiana Harbor at future high production rates are expected to be less than those observed in 1997 and 1998.

EXHIBIT A (page 1 of 4)

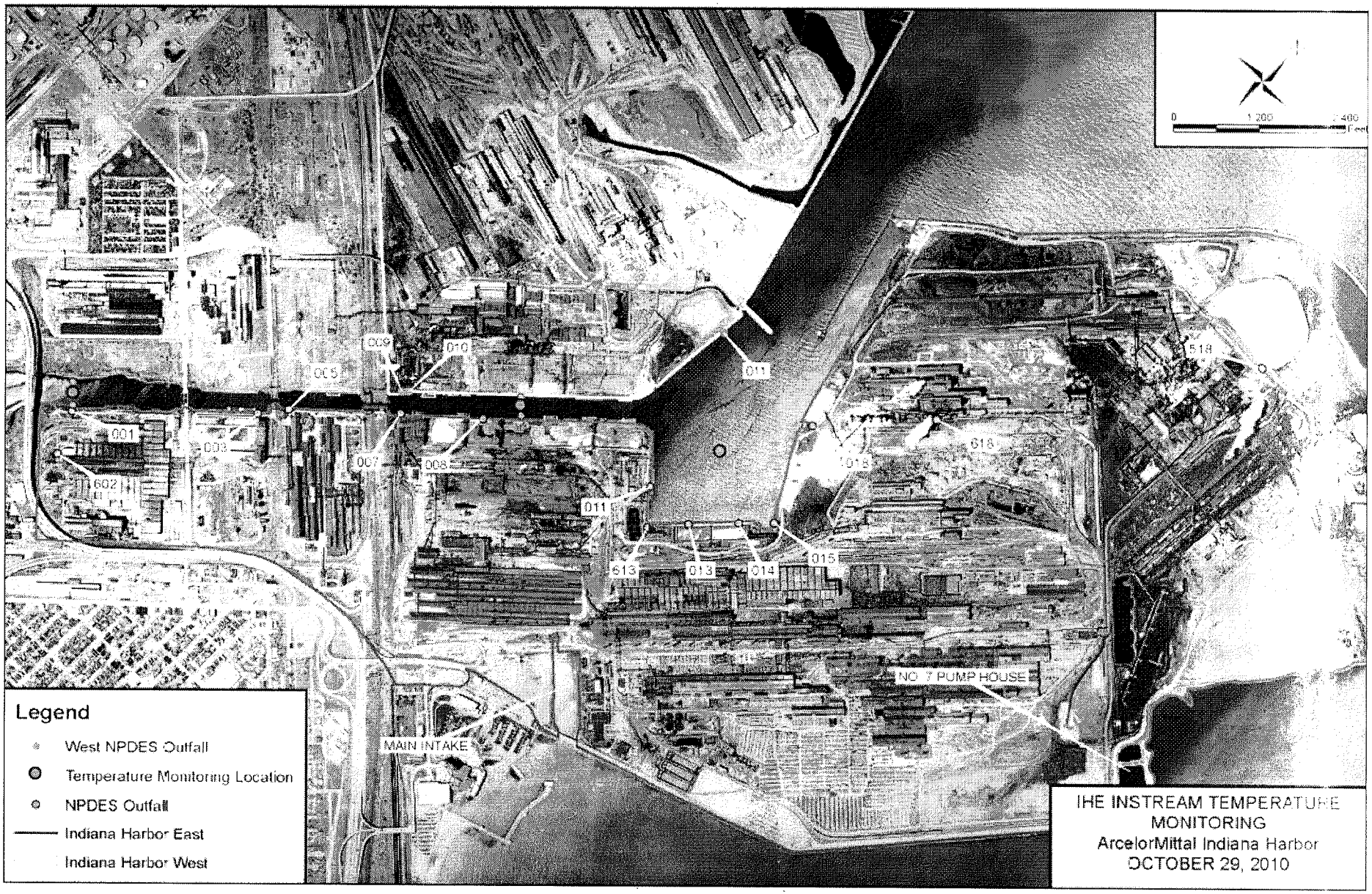


EXHIBIT A (page 2 of 4)

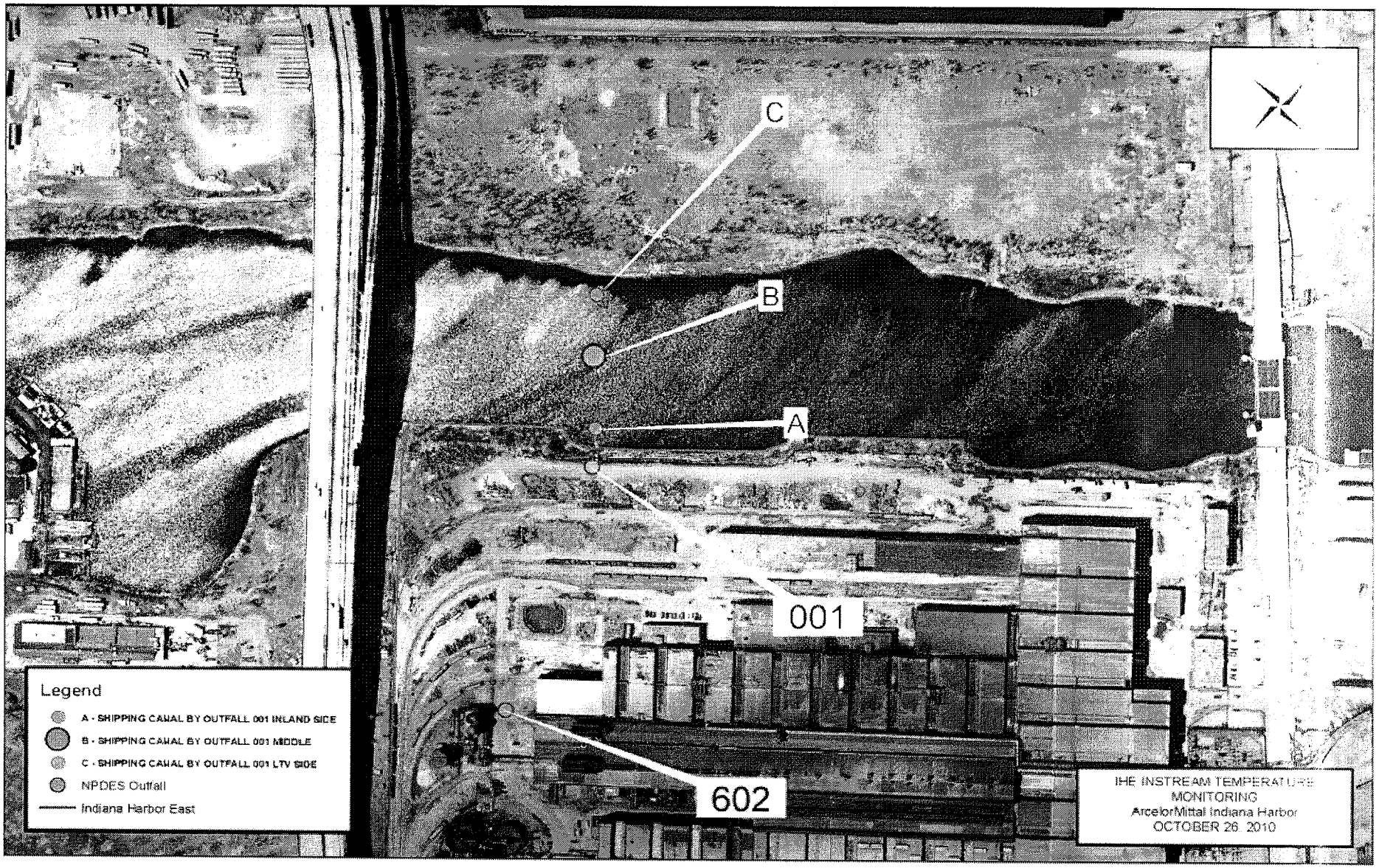


EXHIBIT A (page 3 of 4)

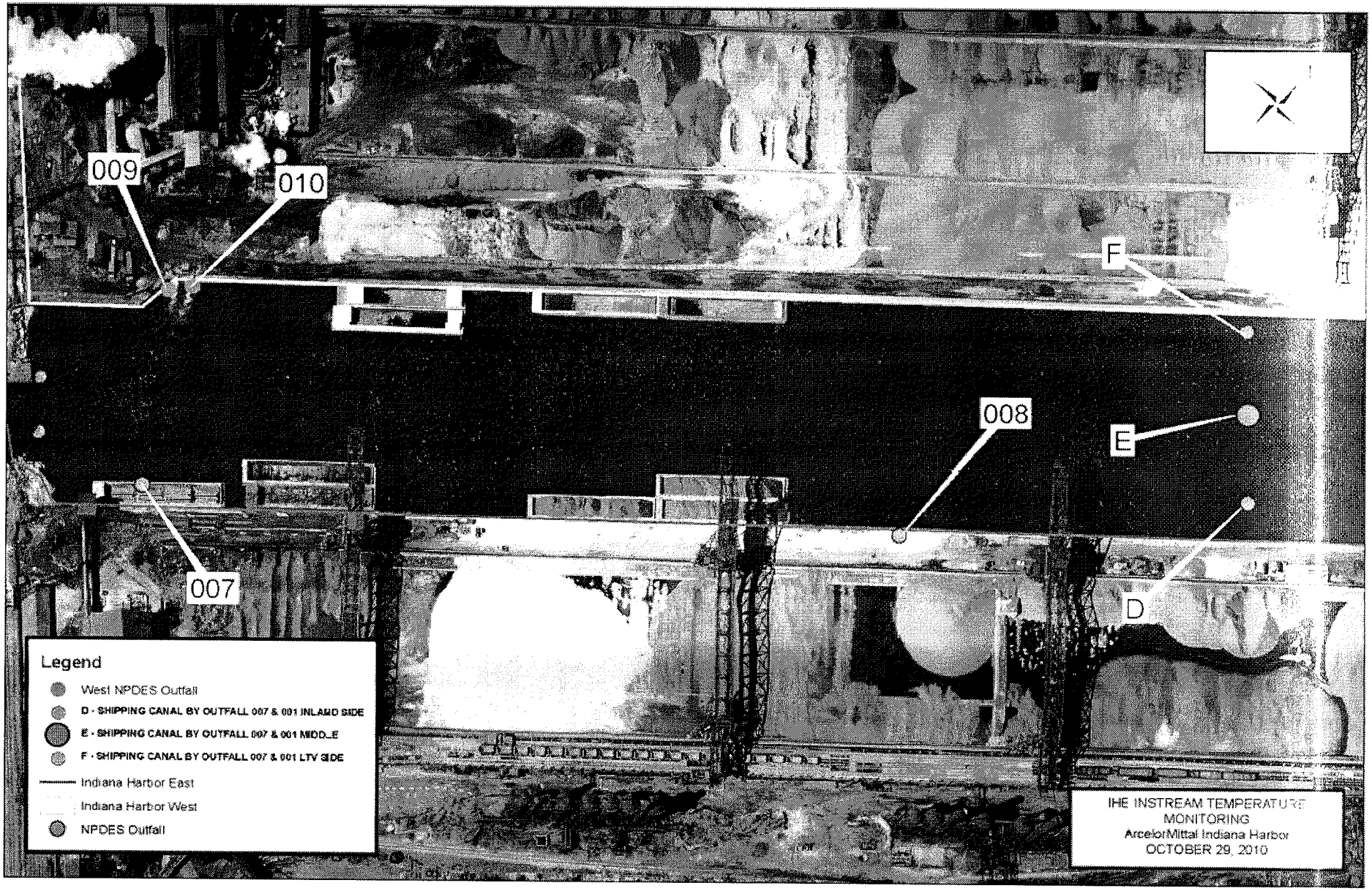


EXHIBIT A (page 4 of 4)

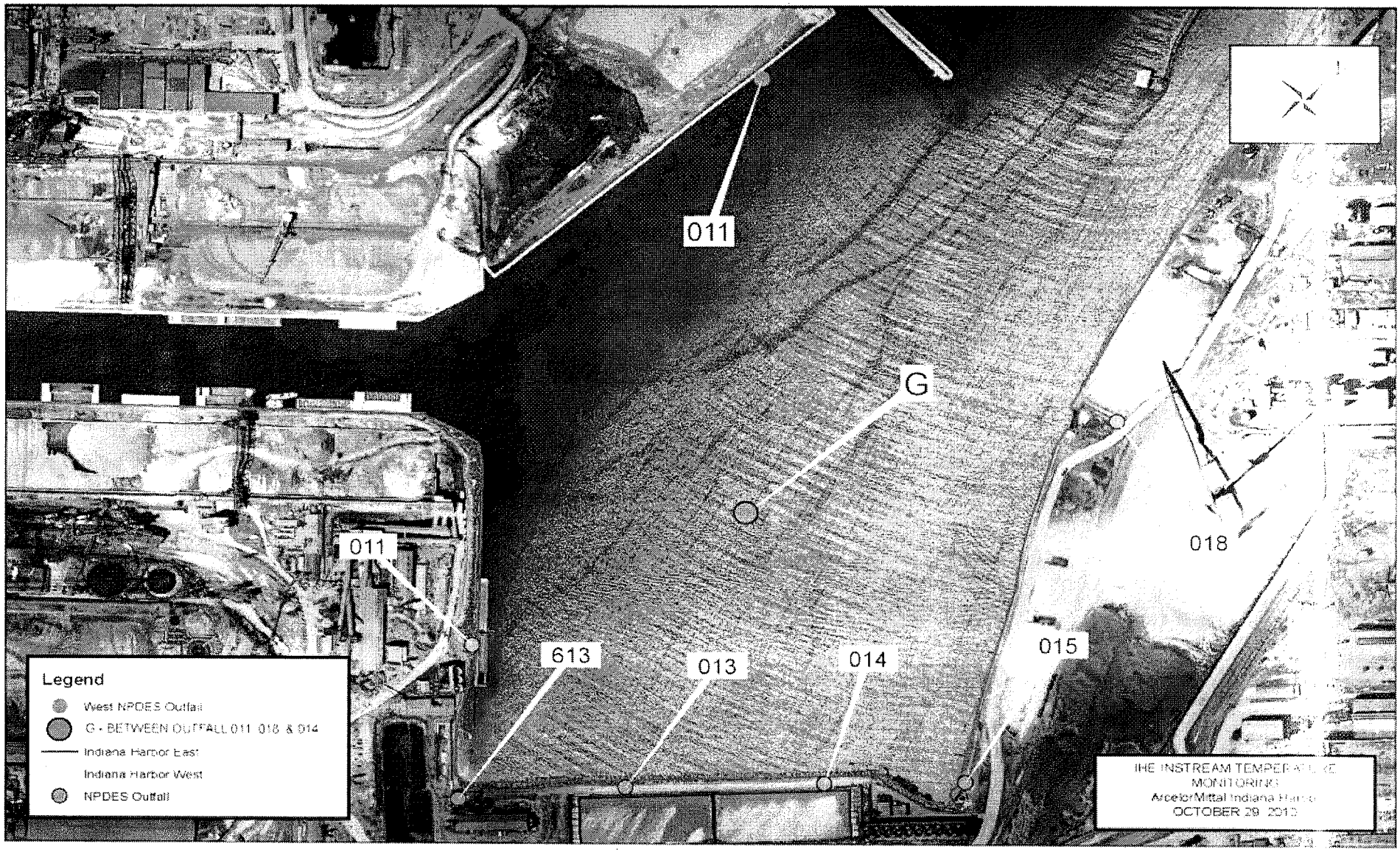


EXHIBIT B

Instream Temperature Monitoring Study

Indiana Harbor and Indiana Harbor Ship Canal

Data Collected in 1997 and 1998 (all temperatures in deg F)

11/16/2010

Date		ONE FOOT BELOW SURFACE			MID-DEPTH			ONE FOOT FROM BOTTOM			MAXIMUM	Indiana Water Quality Standard
		Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	of Recorded Temperatures	(Lake Michigan)
04/29/97	(center)	64	55	57	63	53	51	63	52	50	64	70
05/21/97	(center)	67	67	65	66	63	63	65	65	55	67	80
06/04/97	(center)	71	67	68	70	61	66	64	55	58	71	90
06/11/97	(center)	73	71	70	72	60	58	72	59	58	73	90
06/16/97	(center)	74	71	70	73	67	64	73	62	62	74	90
06/27/97	(center)	79	75	75	78	65	63	77	63	62	79	90
07/03/97	(center)	77	70	70	75	61	64	73	59	60	77	90
07/07/97	(center)	76	75	74	74	69	62	70	62	62	76	90
07/16/97	(center)	82	77	75	80	70	68	73	66	66	82	90
07/24/97	(center)	82	82	81	81	74	72	80	70	70	82	90
08/01/97	(center)	84	80	81	83	76	75	82	73	73	84	90
08/04/97	(center)	84	82	82	82	80	78	81	72	72	84	90
08/14/97	(center)	80	79	77	80	76	74	80	73	72	80	90
08/21/97	(center)	79	78	77	79	76	78	78	72	72	79	90
08/26/97	(center)	81	77	79	80	75	77	80	70	71	81	90
09/03/97	(center)	78	80	78	78	78	77	77	73	73	80	90
09/13/97	(center)	78	76	75	78	71	71	77	69	69	78	90
09/18/97	(center)	79	76	76	79	72	74	79	71	70	79	90
09/25/97	(center)	76	73	74	75	73	73	75	68	68	76	90
10/01/97	(center)	72	74	74	72	71	70	72	67	66	74	78
10/23/97	(center)	63	63	62	63	59	60	63	58	57	63	78
11/25/97	(center)	58	53	50	58	50	46	57	44	43	58	70

EXHIBIT B

Instream Temperature Monitoring Study

Indiana Harbor and Indiana Harbor Ship Canal

Data Collected in 1997 and 1998 (all temperatures in deg F)

11/16/2010

Date		ONE FOOT BELOW SURFACE			MID-DEPTH			ONE FOOT FROM BOTTOM			MAXIMUM	Indiana Water Quality Standard
		Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	Ship Canal near Outfall 001	Between Outfalls 007 & 011	Between Outfalls 011, 018 & 014	of Recorded Temperatures	(Lake Michigan)
04/24/98	(center)	65	51	60	61	58	56	61	55	52	65	70
05/14/98	(center)	73	66	67	71	60	61	70	55	55	73	80
06/16/98	(center)	75	70	74	74	69	66	72	67	65	75	90
06/03/98	(center)	74	73	71	73	68	69	73	66	66	74	90
06/10/98	(center)	72	70	71	70	67	66	69	63	63	72	90
06/23/98	(center)	79	75	77	78	70	71	76	66	67	79	90
07/07/98	(center)	81	79	81	81	74	78	80	71	72	81	90
07/17/98	(center)	85	84	85	83	78	77	82	73	75	85	90
07/23/98	(center)	83	84	83	83	78	77	82	74	75	84	90
08/07/98	(center)	81	79	77	81	76	74	80	73	70	81	90
08/04/98	(center)	83	82	81	83	78	78	82	75	75	83	90
08/14/98	(center)	84	81	81	82	76	76	82	72	72	84	90
08/20/98	(center)	83	79	82	82	78	76	82	75	75	83	90
08/28/98	(center)	84	80	81	84	76	75	84	73	73	84	90
09/04/98	(center)	82	81	81	82	78	77	81	75	74	82	90
09/10/98	(center)	80	76	77	80	79	74	79	72	72	80	90
09/17/98	(center)	82	80	80	81	77	75	81	72	72	82	90
09/23/98	(center)	79	78	78	74	73	74	78	70	70	79	90
09/30/98	(center)	76	75	76	76	70	71	75	67	67	76	90
10/26/98	(center)	69	66	64	69	60	61	68	57	55	69	78
10/26/98	(east bank)	69	66		69	60		68	57			78
10/26/98	(west bank)	68	66		69	61		68	56			78
11/24/98	(center)	58	57	56	58	54	53	57	51	51	58	70
11/24/98	(east bank)	58	58		58	55		57	52			70
11/24/98	(west bank)	58	56		57	54		57	51			70

EXHIBIT C

ArcelorMittal Indiana Harbor West
Instream Temperature Monitoring Study
Monthly Average Air Temperature Statistics at Ogden Dunes, IN
1970 to 2009

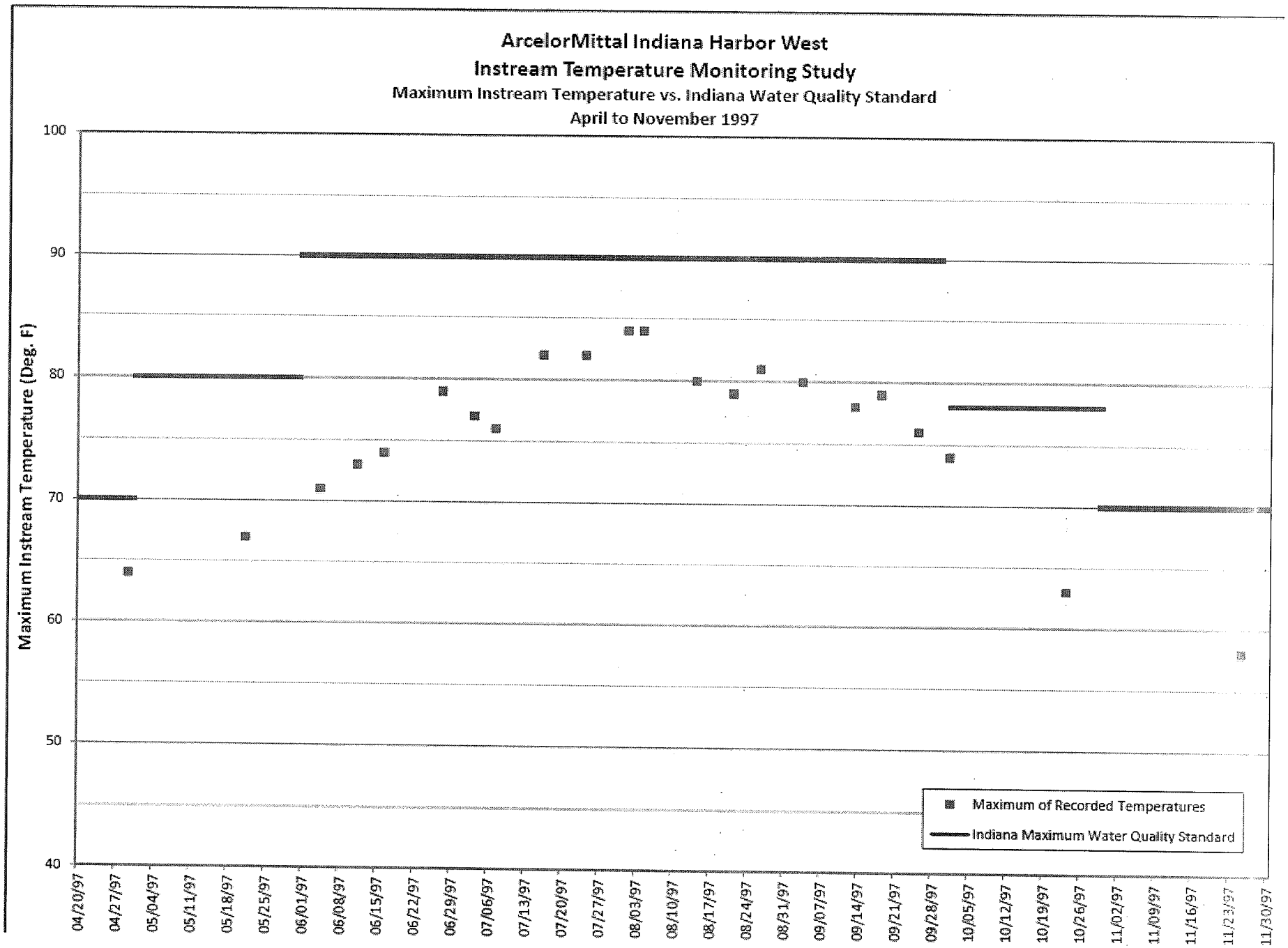
Amendola Engineering, Inc.
11/16/2010

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Temperature Study	1997	43.4	51.6	54.4	58.3	62.9	72.6	74.2	71.8	70.3	62.6	54.9	50.8
Temperature Study	1998	49.4	56.1	54.6	62.0	68.7	73.3	74.3	74.5	73.2	64.1	59.1	53.0
AVG Monthly Average Temperature		46.0	50.1	53.7	61.2	64.7	71.2	72.4	72.7	70.3	61.6	56.5	48.9
MAX Monthly Average Temperature		52.8	56.1	58.4	64.9	71.3	76.3	77.1	76.9	74.1	68.2	61.4	54.5

Temperature Data Sources

1970-1989 - Station No. 12654299999

1990-2009 - Station No. 12424499999

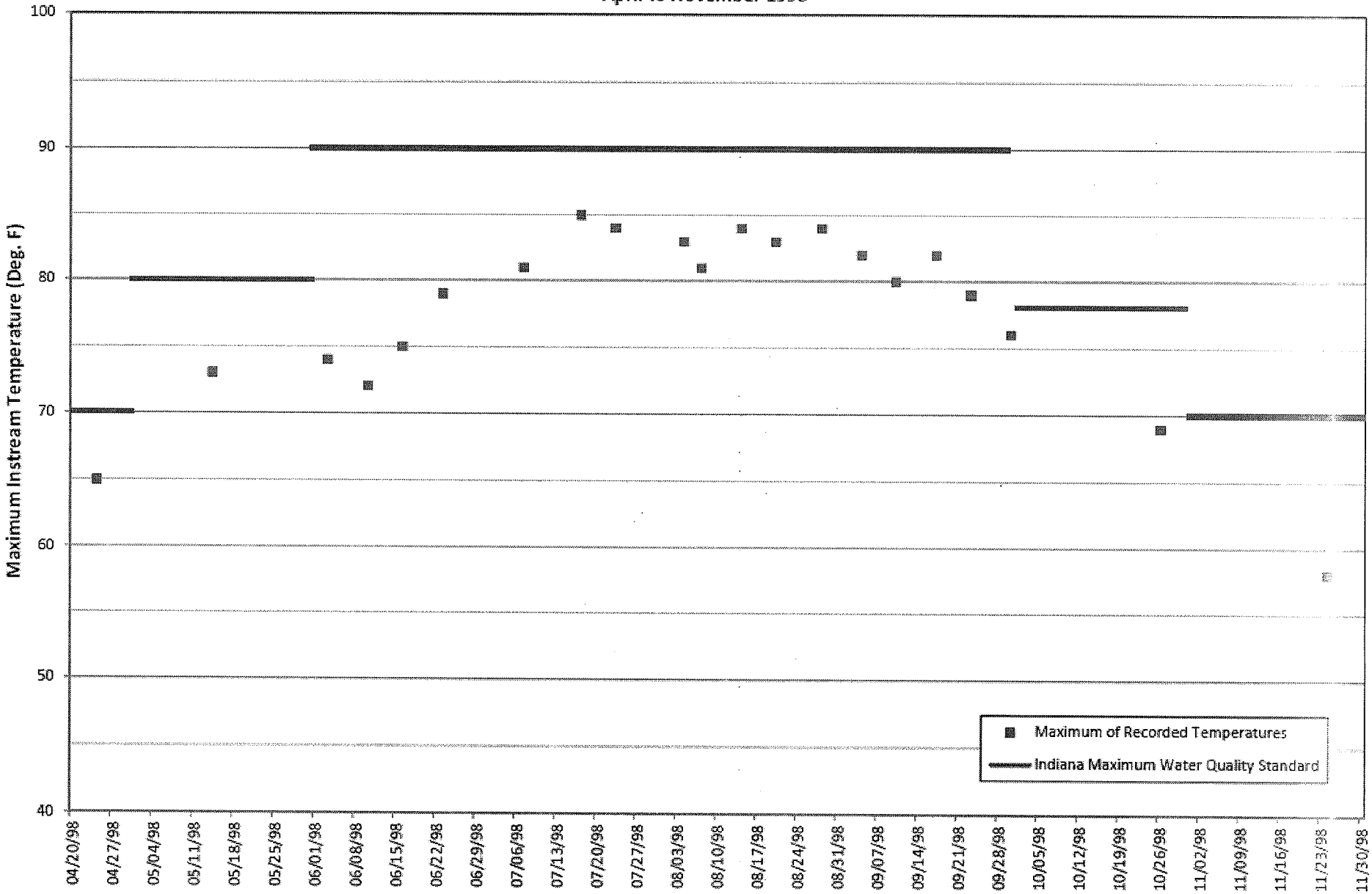

ArcelorMittal Indiana Harbor West
Instream Temperature Monitoring Study
Maximum Instream Temperature vs. Indiana Water Quality Standard
April to November 1997
Maximum Instream Temperature (Deg. F)
100
90
80
70
60
50
40
04/20/97
04/27/97
05/04/97
05/11/97
05/18/97
05/25/97
06/01/97
06/08/97
06/15/97
06/22/97
06/29/97
07/06/97
07/13/97
07/20/97
07/27/97
08/03/97
08/10/97
08/17/97
08/24/97
08/31/97
09/07/97
09/14/97
09/21/97
09/28/97
10/05/97
10/12/97
10/19/97
10/26/97
11/02/97
11/09/97
11/16/97
11/23/97
11/30/97
Maximum of Recorded Temperatures
Indiana Maximum Water Quality Standard

ArcelorMittal Indiana Harbor West

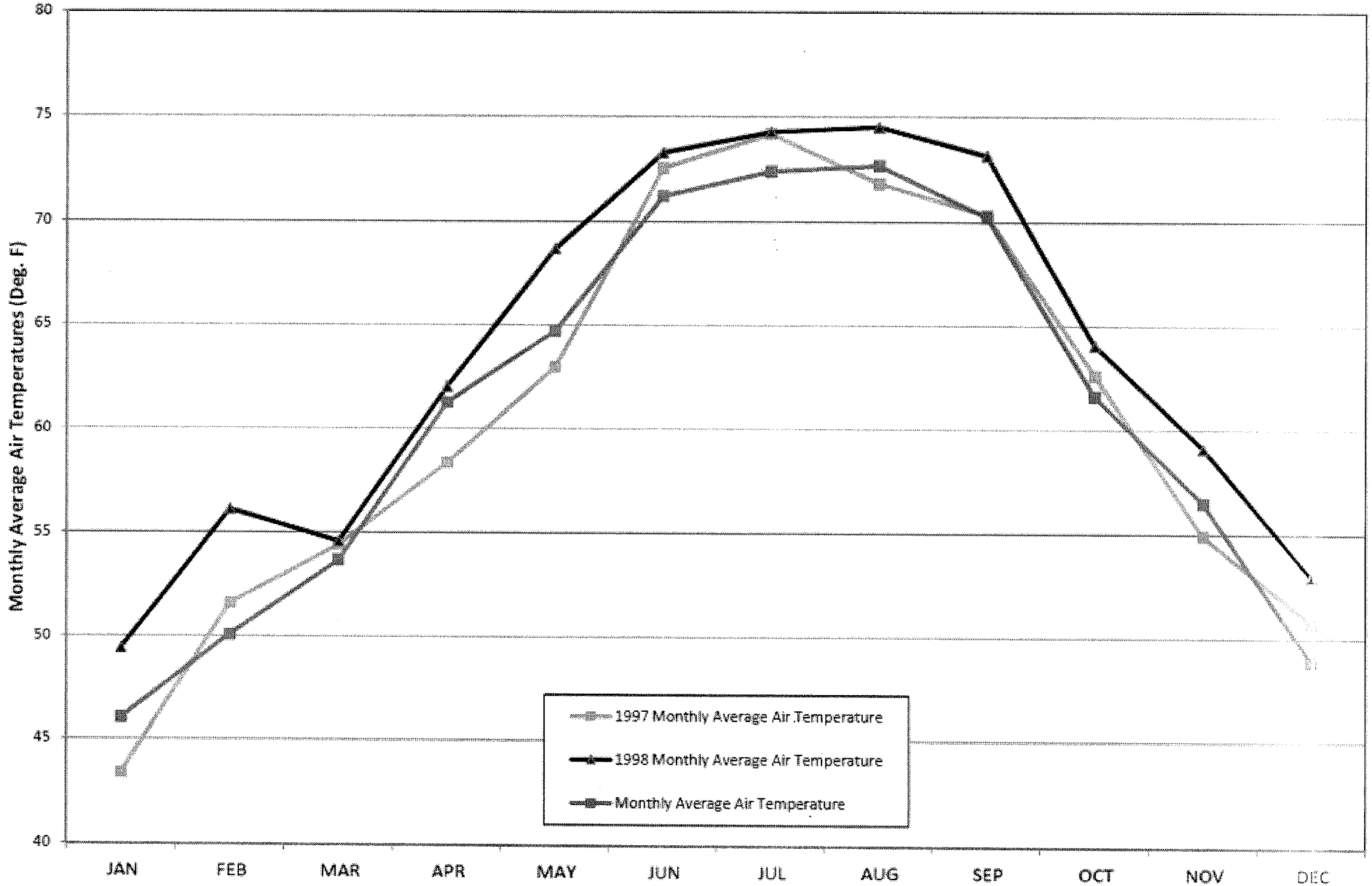
Instream Temperature Monitoring Study

Maximum Instream Temperature vs. Indiana Water Quality Standard

April to November 1998



ArcelorMittal Indiana Harbor West
Instream Temperature Monitoring Study
1997 and 1998 Monthly Average Air Temperatures at Ogden Dunes, IN
Compared to 1970-2009 Average Monthly Air Temperatures



IDEM Fixed Station Monitoring Data for Cyanide (Stations IHC - 0 and IHC - 2)

IHC - 0 (IHSC near ArcelorMittal West Outfall 011) (mg/l)			
Date	CATC	F. CN	T. CN
1/23/1990			0.007
2/27/1990			0.008
3/27/1990			< 0.005
4/24/1990			< 0.005
6/5/1990			< 0.005
8/7/1990			< 0.005
9/18/1990			< 0.005
10/2/1990			< 0.005
11/27/1990			< 0.005
1/16/1991			0.006
2/12/1991			0.009
4/17/1991			0.007
5/22/1991			< 0.005
7/24/1991			< 0.005
8/14/1991			< 0.005
10/22/1991			< 0.005
11/20/1991			< 0.005
2/25/1992			0.007
3/25/1992			< 0.005
4/21/1992			< 0.005
5/19/1992			< 0.005
6/23/1992			< 0.005
9/22/1992			< 0.005
10/20/1992			< 0.005
11/17/1992			< 0.005
3/16/1993			< 0.005
4/26/1993			0.006
5/11/1993			< 0.005
8/2/1993			< 0.005
9/8/1993			0.011
9/29/1993			0.006
10/27/1993			< 0.005
11/16/1993			< 0.005
12/28/1993			0.01
2/1/1994			0.007
3/2/1994			< 0.005
3/15/1994			< 0.005
4/26/1994			< 0.005
6/1/1994			
8/1/1994			0.009
8/31/1994			0.006
10/3/1994			< 0.005
11/9/1994			0.008
1/18/1995			0.012
3/7/1995			0.005
4/27/1995			< 0.005

IHC-2 (IHSC at Dickey Road) (mg/l)			
Date	CATC	F. CN	T. CN
1/23/1990			< 0.005
2/27/1990			0.008
3/27/1990			< 0.005
4/24/1990			0.005
5/15/1990			0.007
6/5/1990			0.008
4/26/1993			< 0.005
5/11/1993			< 0.005
8/2/1993			< 0.005
9/8/1993			< 0.005
9/29/1993			0.006
10/27/1993			0.007
11/17/1993			< 0.005
12/23/1993			0.006
2/1/1994			< 0.005
3/2/1994			0.005
3/15/1994			0.006
4/26/1994			0.005
6/1/1994			
8/1/1994			0.005
8/31/1994			< 0.005
10/3/1994			< 0.005
11/9/1994			0.006
1/17/1995			0.01
3/7/1995			< 0.005
4/26/1995			< 0.005
5/18/1995			< 0.005
6/15/1995			0.007
7/26/1995			0.007
8/29/1995			< 0.005
9/26/1995			< 0.005
10/24/1995			< 0.005
11/14/1995			0.005
12/20/1995			< 0.005
1/22/1996			0.006
2/27/1996			< 0.005
3/25/1996			0.005
4/23/1996			0.008
5/21/1996			0.006
6/18/1996			0.009
7/16/1996			0.006
8/20/1996			0.007
9/17/1996			< 0.005
10/22/1996			0.006
11/12/1996			0.007
12/10/1996			0.009

IDEM Fixed Station Monitoring Data for Cyanide (Stations IHC - 0 and IHC - 2)

IHC - 0 (IHSC near ArcelorMittal West Outfall 011) (mg/l)			
Date	CATC	F. CN	T. CN
5/19/1995			< 0.005
6/15/1995			< 0.005
7/26/1995			< 0.005
8/29/1995			< 0.005
9/26/1995			< 0.005
10/24/1995			< 0.005
11/14/1995			0.006
12/20/1995			< 0.005
1/22/1996			0.008
2/27/1996			0.007
3/25/1996			0.005
4/23/1996			< 0.005
5/21/1996			0.006
6/18/1996			0.008
7/16/1996			0.006
8/20/1996			< 0.005
9/17/1996			0.029
10/22/1996			0.005
11/12/1996			0.006
12/10/1996			< 0.005
2/4/1997			0.006
2/25/1997			0.007
4/1/1997			< 0.005
4/29/1997			< 0.005
5/27/1997			< 0.005
6/17/1997			0.005
7/22/1997			< 0.005
8/19/1997			< 0.005
9/23/1997			< 0.005
10/20/1997			< 0.005
11/17/1997			< 0.005
12/8/1997			< 0.005
2/3/1998			< 0.005
3/3/1998	0.005		0.006
3/31/1998			< 0.005
4/27/1998			< 0.005
6/2/1998			< 0.005
6/29/1998			< 0.005
7/27/1998			< 0.005
8/31/1998			< 0.005
9/28/1998			< 0.005
10/26/1998			< 0.005
11/16/1998			< 0.005
12/14/1998			< 0.005
1/25/1999	0.005		0.009
2/22/1999			< 0.005

IHC-2 (IHSC at Dickey Road) (mg/l)			
Date	CATC	F. CN	T. CN
2/4/1997			0.009
2/25/1997			0.013
4/1/1997			0.01
4/29/1997			0.008
5/27/1997			< 0.005
6/17/1997			0.005
7/22/1997			< 0.005
8/19/1997			< 0.005
9/23/1997			< 0.005
10/20/1997			0.005
11/17/1997			0.006
12/8/1997			0.006
2/3/1998	0.005		0.007
3/3/1998	0.005		0.005
3/31/1998	0.005		0.005
4/27/1998			< 0.005
6/2/1998			< 0.005
6/29/1998			< 0.005
7/27/1998			< 0.005
8/31/1998			< 0.005
9/28/1998	0.005		0.005
10/26/1998			0.01
11/16/1998			< 0.005
12/14/1998			< 0.005
1/25/1999	0.005		0.006
2/22/1999	0.005		0.007
3/23/1999			< 0.005
4/28/1999	0.007		0.007
5/25/1999			< 0.005
6/22/1999			< 0.005
7/27/1999	0.005	< 0.005	0.005
8/25/1999		< 0.005	< 0.005
9/28/1999	< 0.005	< 0.005	0.006
10/27/1999		< 0.005	< 0.005
11/23/1999	0.005	< 0.005	0.005
12/14/1999	0.005	< 0.005	0.005
1/31/2000		< 0.005	< 0.005
2/28/2000		< 0.005	< 0.005
3/29/2000		< 0.005	< 0.005
4/26/2000		< 0.005	< 0.005
5/31/2000		< 0.005	< 0.005
6/27/2000		< 0.005	< 0.005
7/25/2000			< 0.005
8/30/2000			< 0.005
9/27/2000			< 0.005
10/30/2000			< 0.005

IDEM Fixed Station Monitoring Data for Cyanide (Stations IHC - 0 and IHC - 2)

IHC - 0 (IHSC near ArcelorMittal West Outfall 011) (mg/l)			
Date	CATC	F. CN	T. CN
3/23/1999			< 0.005
4/28/1999			< 0.005
5/25/1999			< 0.005
6/22/1999			< 0.005
7/28/1999		< 0.005	< 0.005
8/25/1999		< 0.005	< 0.005
9/28/1999	0.006	< 0.005	0.006
10/27/1999		< 0.005	< 0.005
11/23/1999		< 0.005	< 0.005
12/29/1999	0.005	< 0.005	0.007
1/31/2000	0.005	0.014	0.017
2/28/2000	0.005	0.015	0.021
3/29/2000	0.011	0.006	0.011
4/27/2000	0.45	0.545	0.521
5/31/2000	0.005	0.005	0.008
6/27/2000	0.005	< 0.005	0.007
7/25/2000			0.009
8/30/2000			0.014
9/27/2000			0.008
10/31/2000			0.008
11/28/2000			0.03
12/18/2000			0.005
1/30/2001		< 0.005	< 0.005
2/26/2001		< 0.005	
3/20/2001		< 0.005	< 0.005
4/18/2001		< 0.005 (QJ)	< 0.005
5/29/2001			< 0.005
6/25/2001			< 0.005
7/23/2001	0.005	< 0.005	0.005
8/22/2001			< 0.005 (QJ)
9/24/2001	0.017	0.014	0.034
10/16/2001	< 0.005	< 0.005	0.008
11/26/2001	0.007	0.032	0.079
12/17/2001	< 0.005	0.006	0.012
1/23/2002			< 0.005
2/25/2002			< 0.005
3/27/2002			< 0.005
4/22/2002			< 0.005
5/13/2002			< 0.005 (QJ)
6/24/2002			< 0.005
7/24/2002			< 0.005
9/23/2002			< 0.005
10/30/2002			< 0.005
11/20/2002			< 0.005
12/18/2002			< 0.005
1/15/2003			< 0.005

IHC-2 (IHSC at Dickey Road) (mg/l)			
Date	CATC	F. CN	T. CN
11/28/2000			0.008
12/18/2000			0.007
10/30/2000			< 0.005
1/30/2001	< 0.005	< 0.005	0.007
2/26/2001		< 0.005	
3/20/2001		< 0.005	< 0.005
4/18/2001		< 0.005 (QJ)	< 0.005
5/29/2001			< 0.005
6/25/2001			< 0.005
7/23/2001			< 0.005
8/22/2001			< 0.005 (QJ)
9/24/2001			< 0.005
10/16/2001			< 0.005
11/26/2001	0.005	< 0.005	0.005
12/17/2001	0.005	< 0.005	0.005
1/23/2002			< 0.005
2/25/2002			< 0.005
3/27/2002			< 0.005
4/22/2002			< 0.005
5/13/2002			< 0.005 (QJ)
6/24/2002			< 0.005
7/24/2002			< 0.005
8/26/2002			< 0.005
9/23/2002			< 0.005
10/30/2002			< 0.005
11/20/2002			< 0.005
12/18/2002	0.006	< 0.005	0.006
1/15/2003			< 0.005
2/19/2003			< 0.005
3/19/2003			< 0.005
4/23/2003			< 0.005
5/12/2003			< 0.005
6/11/2003			< 0.005
7/7/2003			< 0.005
8/11/2003			< 0.005
9/10/2003			< 0.005
10/22/2003			< 0.005
11/19/2003			< 0.005
12/17/2003	0.005 (UJ)	< 0.005	0.006
1/8/2004			< 0.005
2/18/2004			< 0.005
3/30/2004			
4/21/2004			< 0.005
5/26/2004			< 0.005
6/16/2004			< 0.005
7/19/2004			< 0.005

IDEM Fixed Station Monitoring Data for Cyanide (Stations IHC - 0 and IHC - 2)

IHC - 0 (IHSC near ArcelorMittal West Outfall 011) (mg/l)			
Date	CATC	F. CN	T. CN
2/19/2003			< 0.005
3/19/2003			< 0.005
4/23/2003			< 0.005
5/12/2003			< 0.005
6/11/2003			< 0.005
7/7/2003			< 0.005
8/11/2003			< 0.005
9/10/2003			< 0.005
10/22/2003			< 0.005
11/20/2003			< 0.005
12/17/2003			< 0.005
1/7/2004			< 0.005
2/19/2004			< 0.005
3/30/2004			
4/21/2004			< 0.005
5/26/2004			< 0.005
6/16/2004			< 0.005
7/19/2004			< 0.005
8/16/2004			< 0.005
9/21/2004			< 0.005
10/26/2004			< 0.005
11/30/2004			< 0.005
12/20/2004			< 0.005
1/12/2005			< 0.005
2/24/2005			< 0.005
3/21/2005			< 0.005
4/27/2005			< 0.005
5/24/2005			< 0.005
6/27/2005			< 0.005
7/28/2005			< 0.005
8/22/2005			< 0.005
9/26/2005			< 0.005
11/28/2005			< 0.005
12/14/2005			< 0.005
2/6/2006			< 0.005
3/15/2006			< 0.005
4/26/2006			< 0.005
5/22/2006			< 0.005
6/21/2006			< 0.005
7/10/2006			< 0.005
8/14/2006			< 0.005
9/26/2006			< 0.005
10/19/2006			< 0.005
11/28/2006			< 0.005
12/18/2006			< 0.005
1/22/2007			< 0.005

IHC-2 (IHSC at Dickey Road) (mg/l)			
Date	CATC	F. CN	T. CN
8/16/2004			< 0.005
9/20/2004			< 0.005
10/25/2004			< 0.005
11/29/2004			< 0.005
12/20/2004			< 0.005
1/12/2005	0.006	< 0.005	0.006
2/23/2005	0.005	< 0.005	0.005
3/21/2005			< 0.005
4/27/2005			< 0.005
6/27/2005			< 0.005
7/27/2005			< 0.005
8/22/2005			< 0.005
9/26/2005			< 0.005
10/26/2005			< 0.005
11/28/2005			< 0.005
12/14/2005			< 0.005
1/12/2006			< 0.005 (QJ)
2/6/2006			< 0.005
3/15/2006			< 0.005
4/26/2006			< 0.005
5/22/2006			< 0.005
6/21/2006			< 0.005
7/11/2006			< 0.005
8/14/2006			< 0.005
9/25/2006			< 0.005
10/18/2006			< 0.005
11/27/2006			< 0.005
12/18/2006	0.005	< 0.005	0.005
1/22/2007			< 0.005
2/19/2007			< 0.005
3/28/2007			< 0.005
4/25/2007			< 0.005
5/30/2007			< 0.005
6/20/2007			< 0.005
7/30/2007			< 0.005
8/27/2007	0.005	< 0.005	0.005
9/24/2007			< 0.005
10/29/2007			< 0.005
11/19/2007			< 0.005
12/17/2007			< 0.005
1/9/2008			< 0.005
2/20/2008			< 0.005
3/18/2008			< 0.005
4/21/2008			< 0.005
5/28/2008			< 0.005
6/10/2008			< 0.005

IDEM Fixed Station Monitoring Data for Cyanide (Stations IHC - 0 and IHC - 2)

IHC - 0 (IHSC near ArcelorMittal West Outfall 011) (mg/l)			
Date	CATC	F. CN	T. CN
2/19/2007			< 0.005
3/28/2007			< 0.005
4/26/2007			< 0.005
5/30/2007			< 0.005
6/21/2007			< 0.005
7/30/2007			< 0.005
8/27/2007			< 0.005
9/24/2007			< 0.005
10/29/2007			< 0.005
11/19/2007			< 0.005
12/17/2007			
1/9/2008			
2/20/2008			
3/18/2008			< 0.005
4/21/2008			
5/28/2008			
6/10/2008			
7/28/2008			
8/26/2008			
9/23/2008			
10/27/2008			
11/19/2008			
12/15/2008			
1/21/2009			
2/9/2009			
3/4/2009			
4/21/2009			
5/18/2009			
6/10/2009			
7/27/2009			
8/19/2009			
9/21/2009			
10/7/2009			
11/4/2009			
12/14/2009			
1/19/2010			
2/15/2010			

IHC-2 (IHSC at Dickey Road) (mg/l)			
Date	CATC	F. CN	T. CN
7/28/2008			< 0.005
8/26/2008			< 0.005
9/23/2008			< 0.005
10/27/2008			< 0.005
11/19/2008			< 0.005
12/15/2008			< 0.005
1/21/2009			< 0.005
2/9/2009			< 0.005
3/4/2009			< 0.005
4/21/2009			< 0.005
5/18/2009			< 0.005
6/10/2009			< 0.005
7/27/2009			< 0.005
8/19/2009			< 0.005
9/21/2009			< 0.005
10/7/2009			< 0.005
11/4/2009			< 0.005
12/14/2009			< 0.005
1/19/2010			< 0.005
2/15/2010			< 0.005

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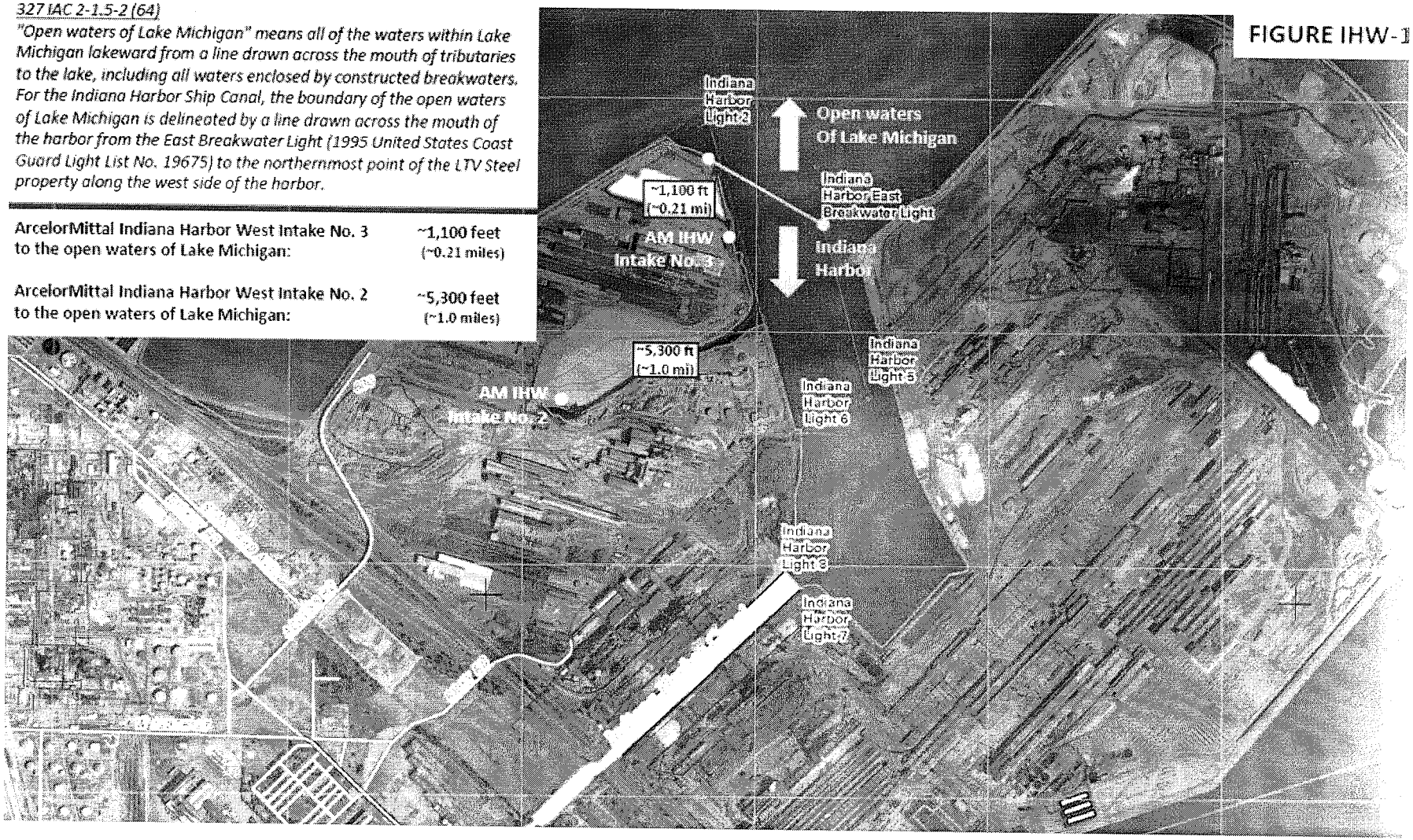
"Open waters of Lake Michigan" means all of the waters within Lake Michigan lakeward from a line drawn across the mouth of tributaries to the lake, including all waters enclosed by constructed breakwaters. For the Indiana Harbor Ship Canal, the boundary of the open waters of Lake Michigan is delineated by a line drawn across the mouth of the harbor from the East Breakwater Light (1995 United States Coast Guard Light List No. 19675) to the northernmost point of the LTV Steel property along the west side of the harbor.

ArcelorMittal Indiana Harbor West Intake No. 3 to the open waters of Lake Michigan:	~1,100 feet (~0.21 miles)
ArcelorMittal Indiana Harbor West Intake No. 2 to the open waters of Lake Michigan:	~5,300 feet (~1.0 miles)

FIGURE IHW-1



SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

1 0.5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 16T
10 000-foot ticks: Indiana Coordinate System of 1983 (west zone)

Imagery ..... NAIP, August 2006
Roads ..... US Census Bureau TIGER data with limited USGS updates, 2006
Names ..... GNIS, 2006
Hydrography ..... National Hydrography Dataset, 2006
Contours ..... National Elevation Dataset, 2003